



FRIDAY, DECEMBER 4.

**Automatic Freight Train Brakes.**

The Western Railway Club held its regular monthly meeting Nov. 18, 17 members being present, President C. F. Pierce in the chair.

After action tending to broaden the requirements of membership, and the declaration of a letter ballot favoring a change to evening sessions by 27 votes to 13, the discussion on automatic brakes for freight cars was continued.

A letter from G. W. Cushing, Superintendent of Motive Power of the Northern Pacific Railroad, was read as follows: "As to automatic brakes, I have very decided views, and do not hesitate to express a preference for them on all cars and on all trains; and for the Westinghouse system as a whole.

"I did have doubts about the automatic system as applied to freight trains until a trial of a freight train fitted with them was had, under my charge, on the Veta Mountain (211 ft. grade) of the Denver & Rio Grande Railway during 1881. I then became convinced, and in actual practice since on this line have seen nothing to change my opinion.

"There are objections which may be urged against any brake when used only on a part of a train, but these objections apply to all systems, even to the hand brake.

"Perhaps very much of the credit now given to bad construction and poor materials in cars would be placed to bad braking if bottom facts were reached by transportation officials.

"I am satisfied that more than one-half the difficulty is due to braking on a part of the train only, and the only safety is to equip all cars as rapidly as may be with automatic brakes, and to make up through trains with these only."

Secretary FORSYTH said: The literature on this subject has been accumulating rapidly during the last month. The first complete and careful report on train brakes was made by the Committee of the Master Car-Builders' Association this year, and was followed by a circular of that committee which has brought out within the last month a good deal of discussion, and added valuable information as to how brake tests should be made. At the June meeting of the American Society of Civil Engineers, Mr. W. P. Shinn presented an elaborate report on car brakes for freight trains, in which he takes up the report of the Car-Builders' Committee. Without discussing all the brakes they mention, he selects the only two which have been applied on a large number of cars, the Westinghouse (35,000 cars) and the American (3,000 cars). This report is decidedly favorable to the American brake, and the points mentioned in favor of it are:

First cost. It gives for the Westinghouse system the cost of equipping per engine at \$500 and per car at \$56.50; for the American system, \$225 per engine and \$28 per car. The cost per year, including interest and maintenance, is, for the Westinghouse, \$3.40 for interest and \$2.27 for maintenance, making a total of \$5.67; and for the American, interest, \$1.70, maintenance, 50 cents, total, \$2.20. This indicates that the American brake costs for equipping about one-half as much as the Westinghouse, and a little less than one-half for maintenance. The cost of maintaining a Westinghouse driver brake is not reported. The American brake guarantee to maintain their steam driver brake for \$10 a year, and their car brake, for both trucks, for not over \$2. On our road the cost of maintaining a Westinghouse brake during the past year has been about \$2.50 per freight car, and comparative tests seem to indicate that it keeps in good order very well. In two points advantage may be claimed for the Westinghouse over the American brake: 1st, It applies the brake when the train is broken in two; 2d, It may be applied from the caboose. It is a question whether these advantages are not worth the extra cost of the Westinghouse, which has cost us, interest and maintenance, only \$5.67 per year.

Mr. Shinn claims an advantage for the American brake, which is hardly a direct advantage to the individual roads; that it acts at all times, on foreign roads as well as at home, when the car crowds against the engine. It is thus wearing itself out doing braking for other people without any return, while the Westinghouse brake until it comes into general use is in operation only on its own road.

Mr. Shinn also claims that a good freight brake should be a detached brake, because of the mixture of cars, but air-brakes can be made effective in a mixed train by shifting to the front all cars having power brakes, at some little additional cost for switching.

Mr. WESTINGHOUSE said that their brake alone had shown by adequate experience what it would do. They had assumed in starting freight brakes that certain ends are necessary, the first of which is an adequate efficiency available at all times and substantially uniform; and secondly, that the action of the brake should be automatic in case of any failure of any part of the brake. Their equipment now extends to between 35,000 or 40,000 freight cars and 10,000 or 15,000 passenger cars, and they awaited equal experience with some other brake before modifying their views.

The following letter from A. Gartner, Assistant Engineer of the Savannah, Florida & Western Railway, was read:

"Your meeting of July 15 discussed the application of the Westinghouse air brake on passenger trains, with all the faults of this system, as sliding of wheels, dust and water in the complicated valves, freezing in winter, losing of the compression air by careless handling of the engineer's valve, the sticking and slow releasing of the applied brakes—in short, all difficulties arising from the use of the, at present, best brake systems.

"Having the same or similar difficulties in working the brakes on our passenger trains, we devised several remedies, viz.: A spring on the handle of the engineer's valve, so as to set the handle automatically to position 2 (rest), preventing the loss of air in case of train-parting or other causes (patented by Howe & Gartner), also release valves to overcome the sticking of the brakes (still under test). Also, improvements in the triple valve were tried, but not yet satisfactorily.

"The 'Carpenter system' of air brakes, used on the Continent, is almost identically the same as the Westinghouse system, but having all the improvements sought for by us for the last year, and, after consulting the Chief Engineer and Master Mechanic, it was thought worth while to try a system which promised so much and did away with many complications of the Westinghouse brake.

"I have been corresponding with the inventor of the system and found that it never has been tried in this country but is adopted as a standard by the German Government, and is applied to many thousands of cars and engines and is giving entire satisfaction. You will find that this system offers all advantages of the Westinghouse brake, can be coupled to the Westinghouse system and operated in connection with any part of that system and does away with costly and complicated valves, etc., is self-adjusting and sets the brake-blocks nearer to the wheel when worn; makes possible regul-

ating the pressure for applying the brakes; gives no danger of dust or freezing interfering with the proper working; no auxiliary reservoir and triple valve; a cheap and easy-working engineer's valve. All these points will recommend the Carpenter Air Brake for use on freight and passenger trains. Mr. J. F. Carpenter has a patent on his system in the United States, and will be glad to have his system tested."

Mr. WESTINGHOUSE said that Mr. Carpenter was an employé of their company abroad, who felt aggrieved at some action, and made the best he could of their apparatus over there. It is not patentable in this country, and is not available for use.

Mr. VERBRYCK, referring to Mr. Shinn's paper, said he asserts that the American brake has been on the St. Louis & San Francisco road for some time, with good success, and at small expense. That may be, but I think at least half the cars that come into our yard have something the matter with their draw rigging, and as soon as that happens the brake is inoperative.

Mr. Shinn speaks of seeing a Pennsylvania train with only one Pennsylvania car in the whole train, and of course, unless the Westinghouse brake is coupled up, it is of no use. Mr. Shinn also states that only about 5 per cent. of the accidents that happen are from trains breaking in two. He takes his figures from the Railroad Gazette, but I am very certain that not one-quarter of such accidents are ever reported. They come together and injure one or two cars a little, and nothing is heard of it. I am skeptical as to buffer brakes, but there may be something in the claim that the brake applies on all the train by the engine shunting off, so that it is easier on the draw gear.

Secretary FORSYTH: That last point that you refer to I think would be a decided disadvantage, because if the brakes are applied on a slight down grade the resistance of the train is increased that much, and your consumption of coal is increased by pulling a train with the brakes applied very often when they were not necessary. You want to store up the power going down grade to carry you up grade, unless there is a stop in the hollow.

Mr. WESTINGHOUSE: As to operating long trains, we can operate successfully on 50 cars, and probably any length of train so far as the automatic action is concerned. On more than 50 it would be difficult to apply the brakes lightly and remove them for every slight slow-up or stop that is necessary in the ordinary running of a train. But by an appliance that we have you can use as much of the train as you wish for this ordinary service, while the whole train is at all times ready for automatic action in case of breaking in two, or anything of that kind. We have recently put in operation a valve for use on the engine, which is of great aid in operating long trains successfully. I cannot speak specifically as to lengths of trains the brake is now used upon; I think anywhere from 15 to 30 cars. I know of none longer.

Mr. SINCLAIR: At Omaha, recently, where they are running very long trains with air brakes, I found that at first they put on passenger engineers, accustomed to passenger work; but those men did not do well. They handled the brake as they did on passenger trains, putting it on too quickly. With practice, a long train of 30 cars will stop at water stations without the least difficulty. They are running trains from Omaha to Denver in 28 hours, and make passenger time if necessary.

Mr. COOKE: We have no trouble in getting our Westinghouse brakes on tight enough, but we do have some trouble in getting them off. They make a quick stop, but we have to wait too long for the brakes to let go. They use up considerable fuel and power, and take a heavy engine to do the work that a lighter one would do if we could get them off more quickly.

The subject of the "Best Material for Journal Bearings" was then discussed, report of which we postpone.

**Master Car-Builders' Association.**

The Secretary, Mr. M. N. Forney, has issued the following circular by direction of the Executive Committee:

**TESTS OF AUTOMATIC CAR COUPLERS.**

The Executive Committee of the Master Car-Builders' Association held a public trial of Automatic Car Couplers at Buffalo last September, and they selected twelve of the number submitted to be put in service, to the extent of ten cars each, during the coming winter. A sub-committee was then appointed to arrange the details of these trials in service, and this committee is now perfecting arrangements to have ten line cars, which pass over trunk lines, equipped with each of the twelve couplers selected, and they hope to have them all in service by Dec. 1.

Each car equipped with these trial couplers will have the following stenciled plainly on each side of the car near one end:

"M. C. B. test.....coupler."

(the name of the coupler on each car being used in the space here left blank), and when the couplers are all in service an additional list will be issued, giving specifically the numbering and lettering on each car equipped with each coupler. In the meantime the stenciling placed upon the cars will serve to identify them. It is desired that these couplers be kept up and remain in active service until May 1, 1886, and a full and detailed report of the cost of all repairs, as well as of the working, or the failure to work safely, of these couplers will be looked for from all members of the Association who are connected with any railroads over which any of these couplers may pass up to that date.

Members of the Association are earnestly requested to see that all car inspectors and foremen of repair shops, as well as trainmen, on the lines with which they are connected, have proper instructions in this matter, and that reports should be made at such a date as will enable members to forward their reports to the Secretary in New York not later than May 10, 1886.

By placing the couplers for trial on line cars, it is thought that reports may be had from the same source on a number of different couplers, and in order to make the style of such report more uniform and easy for tabulation, we give the points which it is especially desired to have information upon while the cars are on your line.

1. The nature and cost of repairs to couplers on each car receiving such repairs, by car number and name of coupler.

2. State whether there has been any failure of any coupler to couple automatically with its own kind, specifying what couplers have so failed and in how many instances and the cause.

3. State whether any of the couplers have automatically uncoupled when in service on your line, specifying what couplers have so behaved, with the number of such occurrences for each coupler, and with cause and circumstances.

4. Give opinion of trainmen as to the comparative safety in coupling and uncoupling each style of coupler which has passed over your line when coupled with one of its own kind.

5. Give opinion of your trainmen as to the comparative safety or danger involved in coupling each of the couplers which have passed over your line with the ordinary

draw head, as compared to coupling two ordinary draw-heads together.

6. Give any further information of importance on points not included in the foregoing, which may have been noticed with regard to any of the couplers which have passed over your line.

**Contributions.****The Operating Department and Management of a Railroad.**

I.

While many very valuable works have been published within the last few years on various railroad subjects, no one appears to have cared to take up the subject of organization and management; and while I am free to admit that there are many good reasons why it is an admirable one to let alone, there are some points about the organization of an operating department which I am convinced should be discussed for the common good of all.

These letters will refer only to that part of the organization which naturally belongs to the General Superintendents, supposing that there is a Vice-President or General Manager, and that the General Superintendent forms part of that officer's staff, along with the General Passenger Agent, General Freight Agent, Auditor, Attorney, etc., etc.—in short, that the General Superintendent is an officer in charge of transportation, roadway and motive power departments, which I believe is generally considered to be the duties of that officer in this day of general managers, more especially on our trunk lines.

The first trouble of any magnitude that I have discovered, and it is not an uncommon one, comes between the General Superintendent and the Superintendent of Motive Power. The next is a general one, between the Superintendent of Motive Power, Chief Engineer, Superintendent of Transportation, and the division superintendents. These sometimes lead to troubles between the division superintendents and his staff, the Roadmaster, Master Mechanics, Master Car-Builders and Train Master. As far as can be seen, this is the out-growth of the tremendously large systems of roads now being run under one management, which I suppose was also the cause or the creation of the position of General Manager, though of course it cannot be said that large and important roads are the only ones that can boast of such an officer.

The word superintendent has a strong meaning, and should not be used except when the power implied is fully intended to go with it. The moment the motive power department made the discovery that there existed an officer between the General Superintendent and any kind of a President, the Superintendent of that department elected himself an officer on the General Manager's staff, on a par with the General Superintendent, and has been in a continual struggle to maintain his position ever since, causing endless trouble to the transportation department and keeping things at a boiling point all round, from the pumping station to the General Superintendent's office. The Chief Engineer and the Superintendent of Transportation have been a little more discreet and humble; they have confined themselves to bossing the Division Superintendent and making his life a burden to him, one trying to get the roadway department and the other the transportation out of his hands—only leaving the Division Superintendent the mistakes and blunders to be held accountable for; while, in fact, they cause many by trying to handle details they know little of, not being on the ground nor fully appreciating the local matters governing almost every case. All this can be obviated by calling things by their right names and keeping officers in their proper positions. We have good authority for the fact that a man cannot serve two masters, and every railroad man will agree with me upon this one point at least: two officers of equal rank cannot run the same department with profit to the company or any degree of comfort to themselves.

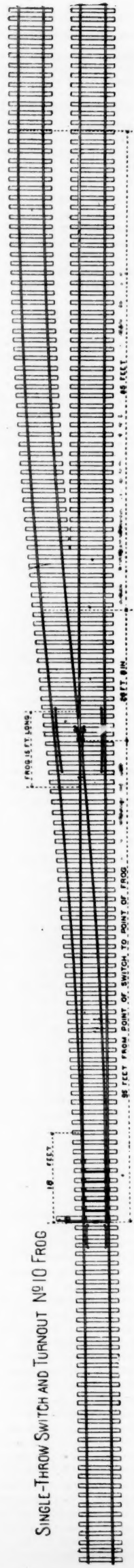
The General Superintendent should have full and undivided control and management of all departments mentioned. The roads for convenience and proper management are divided into divisions, and a person is put in charge of each division. This person has control and is held responsible for the good management of that part of the road. He is therefore the "Superintendent," and is known as such. In addition to this he is generally authorized to use the full power of the General Superintendent when necessary over the portion of the road in his charge. It resolves itself into this: there are two classes of superintendents, a General and a Division Superintendent. Any others must necessarily conflict with the authority of either one or the other, and sometimes both, in some way; therefore they should not exist.

It would be almost impossible for one man to manage these departments of one of our extensive roads alone, and he must necessarily have some assistance. This should be given him under the following heads, as staff officers only. A Chief Engineer, a Mechanical Engineer, in place of a Superintendent of Motive Power, and a Master of Transportation, in place of a Superintendent of the latter. These officers should be assistants to the General Superintendent and not heads of departments, the division superintendents being the heads of all departments on their respective divisions. All the wishes and instructions of the staff officers as to the management of the roadway, shops and power, or train service—distribution of cars, etc., etc., should be sent direct to the Division Superintendent, either in the name of the General Superintendent or their own—it makes little difference which. This arrangement, however, would enable the Division Superintendent to control his own division and prevent troubles arising as to authority—first, between the General Superintendent and his staff; secondly, between the Division Superintendent and his staff. As

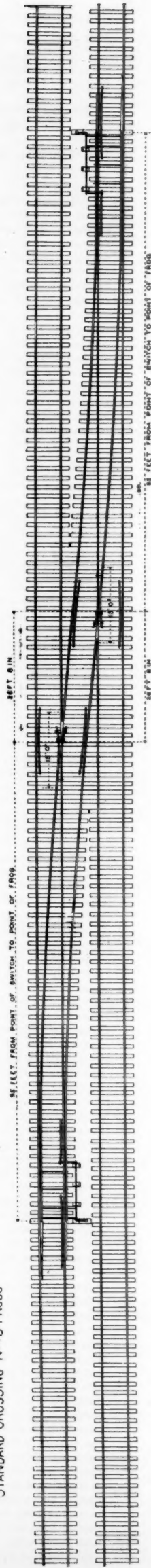


# DETAILS OF STANDARD TURNOUTS AND CROSSINGS P. R. R.

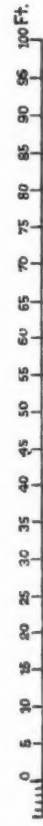
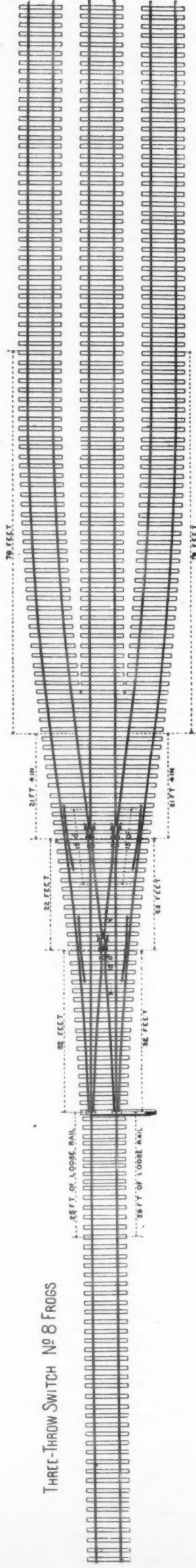
SINGLE-THROW SWITCH AND TURNOUT N<sup>o</sup> 10 FROG



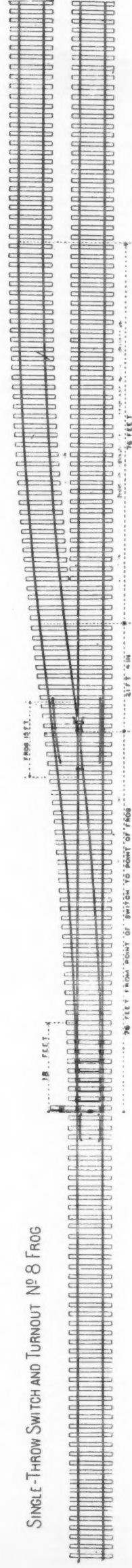
STANDARD CROSSING N<sup>o</sup> 10 FROGS



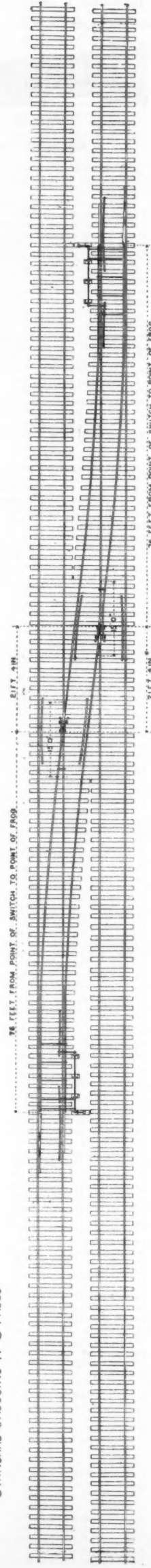
THREE-THROW SWITCH N<sup>o</sup> 8 FROGS

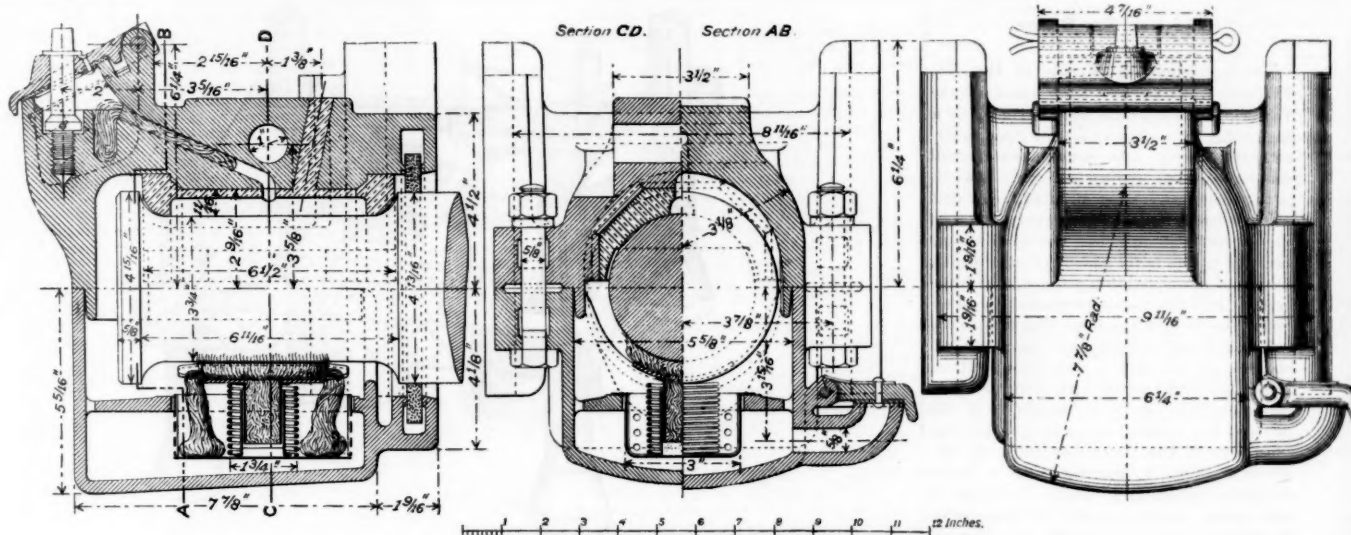


SINGLE-THROW SWITCH AND TURNOUT N<sup>o</sup> 8 FROG



STANDARD CROSSING N<sup>o</sup> 8 FROGS





STANDARD AXLE BOX, SAXON STATE RAILROADS.

an instance of the difficulties caused by the present system in vogue on many roads, the writer will cite one of many cases that have come to his notice. A Division Superintendent needed an extra switch engine at a certain point. He instructed his Master Mechanic to have one ready to send there at a given hour, knowing that there were two or three of these engines at the shop not in service. The answer came back from him apologizing, and saying that he was sorry, but the Superintendent of Motive Power had instructed him to furnish no more switch engines, under any circumstances, without first getting permission from him. The General Superintendent was then appealed to by the Division Superintendent, for help. The answer came from that officer that he was sorry also, but could give no assistance, as the Superintendent of Motive Power was away inspecting cars, and would not return for some days. This to a man who had a large unexpected rush of freight at a terminal point from a foreign road was not agreeable. The only way out of the trouble was to take a freight engine off her regular run, and then instruct the Master Mechanic to furnish a freight engine to replace her. This could be done, as he had no orders against furnishing that class of engines. This Superintendent of Motive Power had worked himself into the General Manager's staff, and also had control of the Master Mechanics on the shop side of the turn-table. Consequently neither the General nor the Division Superintendent could do the necessary work of the road, excepting in a very roundabout way, which might not have been possible had there been a shortage of freight or passenger engines.

If the General Superintendent is not a competent person to have control of his motive power, he should be relieved and some one who is appointed in his stead. The same rule should apply to the division superintendents. Place these officers as suggested, and many such ridiculous troubles and expenses will be removed. The accounts and reports of the motive power department can be managed by a Mechanical Engineer as readily as by a Superintendent of Motive Power, and with as much truth as to inspection and correctness, or by the division superintendents. They can also be sent to any designated office or officer.

The same line of argument applies to each of the other officer. The Chief Engineer or Engineer of Maintenance of Way, which ever he may be called, should have no direct management or control of the roadway department. Experiments in this line have so far proved sad failures for the same reasons; and attempts to separate parts of the transportation department have met a like fate. The Division Superintendent by the above arrangement would thereby be left in full control of the property intrusted to his care. This would also bring the General and Division Superintendents into closer intercourse in regard to every detail, which will be admitted by all to be very desirable, and also keep up the most intimate relationship between the Division Superintendent and his staff, in place of dividing them. SUPERINTENDENT.

#### Pennsylvania Railroad Standard Spike.

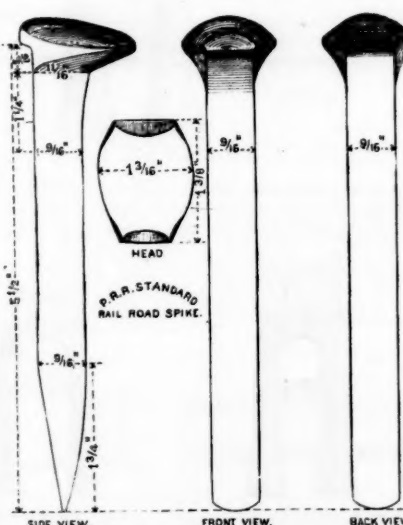
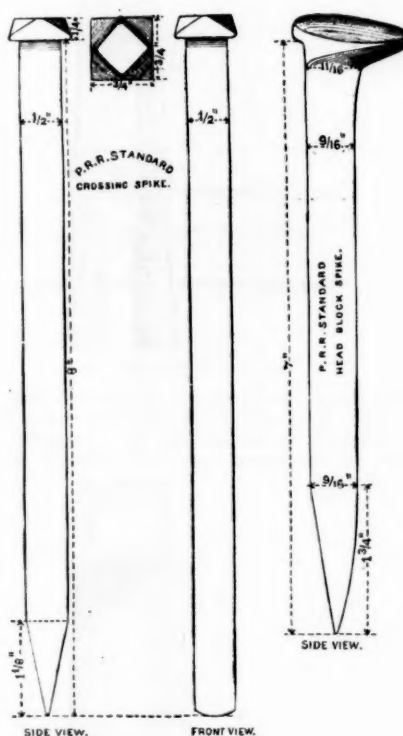
The standards illustrated, for crossing spike, head-block spike and ordinary track spike, were approved April 1, 1885, and are now in force on the Pennsylvania Railroad. Spikes are a simple appliance, yet if many of the forms on the market be compared with these drawings they will be found to differ unfavorably from the forms here shown, as noticeably in the form of the point, the thickening of the shank  $\frac{1}{4}$  in. immediately under the head, for the double purpose of insuring better contact with the rail and providing more material for wear, the length, which is sometimes only  $5\frac{1}{2}$  in. over all and the shape of the head generally. The extra long head block spike is a missing and needed feature on many lines.

#### Standard Turnouts and Crossings, Pennsylvania Railroad.

The standards illustrated were approved April 1, 1883, and are those now in force on the line. It will be observed that only No. 8 and No. 10 frogs are used, all 15 ft. long, and all spring frogs except for three-throw switches. The

Wharton switch is used for cross-overs and split switches for simple turn-outs, a stub switch being used only for three-throw switches which do not easily admit of anything else. We understand, however, that three-throw switches are used but rarely.

The lead is precisely what the usual rule, No. of frog  $\times$  twice gauge, requires, being 95 ft. for No. 10 frog and 78



Standard Spikes, Pennsylvania Railroad.

ft. ( $4.75 \times 2 \times 8$ ) for No. 8 frog. The lead of the three-throw switch, however, is 1 ft. longer than this, for what reason does not appear. The distance from main frog to crotch frog also differs from the usual rule of 3-tenths of lead by 1

ft., being 22 ft. instead of 23.4 ft., which this rule would require.

The space between track centres is 12.5 feet, instead of the more usual 13 ft., and long ties are used substantially in accordance with the usual custom.

#### Periodical Oiling of Cars in Saxony.

The drawings which we give herewith of the Saxon State Railroad standard axle boxes, and the regulations for this system for oiling, form an interesting supplement to Herr Grossmann's views on oiling, recently published.

Attention is called to the care taken in these boxes to avoid grit or dust. Although made in two parts, these parts, owing to the admirable character of the castings, which are machine molded from brass models, without after planing, fit together dust-proof. They are provided with a dust-guard either of papier maché or of wood, with an inlaid felt ring.

There are two oil reservoirs, as will be seen, the oil inlets of which are not only small and provided with tight-fitting caps, but also, in the lower reservoir, the oil is inclosed in an exterior perforated reservoir, allowing dirt to settle into the bottom of the box outside, and effectually excluding the oiling wick from contact with it, while in the upper reservoir the oiling hole is plugged with wicking in such a way as to exclude all dust.

As the lower oiling cushion is held against the journal by a spring, the oil is laid on steadily and uniformly from both above and below, and by the device of a thin slot or chamber in the lower part of the bearing the oil is in a measure forced into the bearing surface. The oiling cushion is made of a kind of plush of wool and cotton, with a short nap above and a long one below, the latter serving as a wick to draw up the oil, and the former distributing the oil upon the journal.

The effective area of the latter, after deducting oil chambers, is 17.56 square inches for double capacity car, against 21.94 square inches of the American M. C. B. standard (in both cases effective horizontal section). The maximum weights per bearing are respectively 11,025 and 6,580 lbs., giving pressures per square inch of 628 lbs. for German cars (Grossmann gives 560 as an ordinary pressure) and 300 lbs. for American cars.

The bearings in these boxes are cast into the box by means of the port at the top, the box being set over an iron core which shapes the bearing surface of the casting. The latter surface is afterward ground to the true form by a special machine.

To change out a worn bearing it is broken out of the box and a new one cast in—a mode of operating which seems a pretty good guarantee that a bad hot box is a very rare occurrence.

That this is so is borne out by the assurances of the Saxon railroad officials that a hot box is almost unknown with them, and by the writer's experience in a stay of a year and a half in Germany, with frequent journeys over all parts of it, in which he never saw or heard of one, while in his first journey on his return three cars in the trains used had them at different times, and one caused a serious delay.

Unequal wear in the bearing is provided against by making it a careful fit to begin with, and allowing the box to have a little play in the pedestal jaws to take up the axle vibrations.

Apropos of the advantage of tight boxes and of the incompleteness of our appliances in this respect, the writer had an opportunity lately of riding for some minutes slowly past a Pennsylvania Railroad passenger train running about 30 miles per hour.

At this speed almost every box cover showed oil at the joint, and in at least one quarter of them the cover was jumping off the seat anywhere from  $\frac{1}{4}$  in. to 1 in. with the shaking of the truck. These box-covers were flaps with springs.

If the results of cool running can be attained by the German methods of oiling, with their greater pressures per square inch, it is evident that it is a mistake for us to attempt a remedy by increasing the size of journals. This is particularly true of increasing the diameter, where every increase is so much lever arm added to the frictional resistance.



## The New Tay Bridge.

The tremendous catastrophe of Dec. 28, 1879, in which thirteen main spans of the Tay bridge fell from the combined effect of a high wind, the weight of a train and inherently bad design and construction is still well remembered, and lends a certain interest to the structure erected in addition to that which it has in itself. The primary error in the original structure was one of the most astonishing ones in the history of engineering, the use of hexagonal iron piers without cross-bracing, and this was supplemented by other minor defects. In the new structure, very naturally, these defects have been avoided, and solidity has been a first consideration. It has been constructed with piers precisely opposite to and only 60 ft. distant from the piers of the original structure, which was illustrated in the *Railroad Gazette* of Jan. 16, 1880. Fig. 1, therefore, is, so far as spans are concerned, a sketch of the old as well as new bridge, and the 13 large spans, of 230 ft., are the ones which fell. The old bridge, however, had skeleton towers in place of the solid construction shown in the cross-sections of Fig. 1, and the trusses were likewise different. The total length of the structure is 10,800 ft., or about two miles, and the rails are 83 ft. above high water at the southern end and 25 ft. at the northern (right-hand) end, there being a slight grade in the bridge.

The 13 main spans are 245 ft., except two of 227 ft. There are also 13 spans of 145 ft., 21 spans of 120 ft., 24 spans of 71 ft., with three of irregular lengths. The whole number of spans, including the approaches, is 85.

The use of so great a number of spans with foundations of such considerable depth and cost and with piers of so great height would seem to be extravagantly uneconomical, and from this point of view to be, therefore, as little creditable to British engineering skill as was the inherent weakness of the first structure. We are unable to give the exact scale of the drawings, as none was given in *The Engineer*, to which we are indebted for our engravings, but approximate estimates from particular dimensions given show (as does also fig. 1) that for a considerable portion of the structure the piers are higher than the spans are long, which is clearly anything but consistent with good design.

Each of the 74 spans which constitute the viaduct proper, exclusive of the 11 spans of the approaches, is carried on piers similar to figs. 2 to 4, constructed with a pair of cylinders connected at a short distance above high water, on which is a wrought iron structure of heights varying from 10 ft. to about 70 ft., the top of which carries the girders. The cylinders of about two-thirds of the piers are constructed with a wrought-iron caisson lined with brickwork and filled with concrete up to low-water level; above this is a brick shaft also filled with concrete. Those for the small spans at the right, fig. 5, are of cast-iron, lined for their whole height with brickwork and filled with concrete. The bases of the cylinders are of various diameters—10 ft. for the piers of the smallest spans to 23 ft. for those of the largest—and except in the few cases where rock is met with the cylinders are sunk to depths varying from 20 ft. to 30 ft. below the bed of the river, so as to be safe from scour. Before building the upper part the cylinder foundations are tested with a weight 33 per cent. greater than the maximum load which can come upon them.

At 1½ ft. above high water there is a strong connecting piece between the pair of cylinders constructed with cast-iron girders, wrought iron ties, brick work and concrete; its height is 8 ft., and width nearly equal to that of the cylinders. On the top of each cylinder and above the connecting piece rises an octagonal shaft of wrought iron, the base of which is formed of a gridiron framework of channel irons attached to the cylinders by long wrought-iron bolts. These shafts are joined together near the top of the pier by a semi-circular arch, forming at the top one structure sufficiently wide to carry the girders. The whole of this structure is constructed of wrought iron plates, riveted together with channel, Tee and angle irons.

Progress on the work has been decidedly slow. The act of Parliament for the undertaking was obtained in 1881, but the contract for the works was not settled until April, 1882, owing to a question raised with the Board of Trade concerning the ruins of the old bridge. On Sept. 25, 1885, only 58 of the 73 piers had been sunk, and about one-

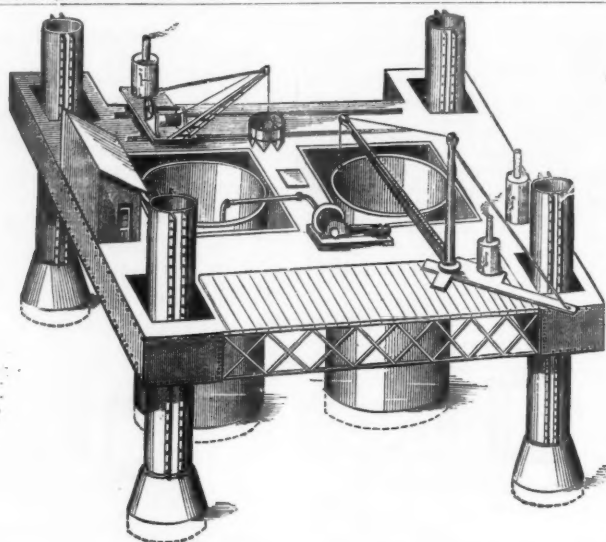


FIG. 6.—THE TAY BRIDGE MANNER OF SINKING CYLINDERS.

fifth of the spans erected. The most interesting feature of the work is the method of sinking the cylinders, shown in fig. 6, devised by Messrs. Arrol, the contractors. This consists of a rectangular pontoon, having at each of its corners vertical wrought-iron tubular legs, which can be raised or lowered hydraulically. When these are lowered to the bed of the river the pontoon can be

lowering the legs great use is made of the tide. Four of these pontoons have been used for sinking the cylinders.

The girders and flooring for each of the 13 large spans are being built entire on a staging at the south end of the viaduct, and arrangements are being made by which the span complete, with flooring, will be floated out to position in the viaduct and placed on the cylinders; they will then be raised hydraulically to their proper height, the wrought-iron shafts of the piers being built up at the same time.

The details here given are from a paper by Mr. C. Barlow, M. Inst. C. E., before the British Association.

## Carroiling Regulations of the Saxon State Railroad.

The management of the Saxon State Railroads has issued the following "Instruction concerning the periodical lubrication of cars."

§ 1. Preliminary.—The periodical lubrication of the axle-boxes of the cars consists in the complete filling of the axle-box with the lubricating material at certain fixed intervals of time.

§ 2. Description of the axle box and the Amount of the Lubricator.—The axle boxes of all our own cars are suited for periodical lubrication, and so arranged that the lubricating material is conducted to the journal either both from above and below, or from below alone. The lubricator is conducted from above by means of wicking; from below, by means of a lubricating pad.

§ 3. To fill completely an empty journal box, which preferably should be done when the car is inspected in the shop about 700 grammes, are required for small boxes and 1,000 grammes for large ones.

In periodical lubrication during operation, the stock in the upper and lower reservoirs, where these are provided with holes for oil, must be increased until they are entirely full, carefully avoiding any waste of material.

§ 4. Rules concerning the Handling of Cars in periodical lubrication and for the employees engaged in it.—The regular lubrication of the cars will be done at the following lubricating stations: Adorf, Aue, Altenburg, Annaberg, Bischoffswerda, Boderbach, Chemnitz (and 32 other stations.)

§ 5. At stations designated in § 4, the periodical lubrication of cars is the duty of special employees or workmen who have been taught to do the work, chiefly of car inspectors, assisted when necessary, by suitable laborers on the principal days for lubricating. When it seems advisable, the car inspectors also can be made to assist in the periodical lubrication.

§ 6. The periodical lubrication of cars may be done only by regular officials (Beamten) or by laborers charged with that duty. They must be designated by name for every lubricating station.

§ 7. With regard to the regular periodical lubrication, the men taking part in it, without exception, will be under the orders respectively of the foremen of round-houses and station agents, as well as the officers of the locomotive inspection office, except when in special cases it is expressly ordered otherwise.

§ 8. All our own cars which are provided with oil registers (see § 10) are to be lubricated regularly, the passenger cars without exception within the first three days of each month, the freight cars, unless temporarily ordered otherwise, within the first 10 days of every other month, in such way that the cars with even numbers should be oiled in the even-numbered months, and the odd-numbered cars in the odd-numbered months.

§ 9. The cars which remain standing in reserve at designated stations are likewise to be lubricated monthly and bi-monthly. But cars which are set out of service for an uncertain time and stand on storage tracks will not be oiled until they are put into service again. (See § 10.) After every oiling the journal-box cover or oil screw must be carefully closed.

§ 10. In order to show on each car that it has been properly oiled, "lubricating registers" will be placed on the sill on each side of each car, reading as follows:

1	2	3	4	5	6	7	8	9	10	11	12
		5	2								
		* Ch.	+ Ri.								

\* Chemnitz. + Riesa.—[Translator.]

The figures 1 to 12 at the head of the columns indicate the months (1 = January, 2 = February, 3 = March, etc.)

The man oiling the car must enter on these registers, on both sides of the car, whether in train or in shop, the number of the day of the month when he oils and the abbrevia-

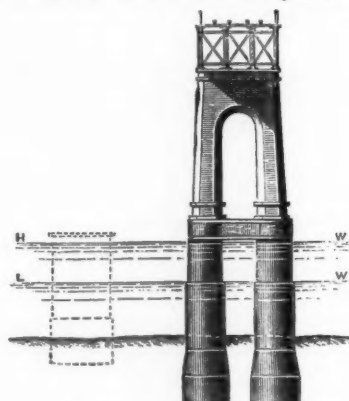


Fig. 2.—Cross-Section at A.

raised out of the water, and thus form a stage for the machinery, material and men required in sinking and filling the cylinders. In the pontoons are two openings, within which the cylinders are pitched and adjusted in position.

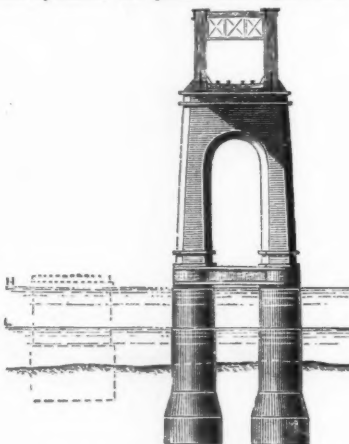


Fig. 3.—Cross-Section at B, Fig. 1.

The excavation is effected by means of steam diggers, and as the digging proceeds the cylinders follow down until the required depth is reached. When the sinking and filling are

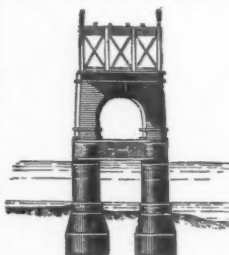


Fig. 4.—Section at C.



Fig. 5.—Section at D.

completed, the supporting tubes or legs are raised from the bottom and the pontoon floated into position for another pier. There is nothing particularly novel in the device, and for many locations it would have no utility, but in this particular location, where a very large number of piers were to be placed in about the same depth of water, it would seem to be well adapted. It may be mentioned that in raising or



tion of the name of the lubricating station (see § 11), as indicated in the above example. This entry will be made with red oil paint in odd-numbered years and with white in even-numbered years. When freight cars which have been on storage tracks for a long time (see § 9) are oiled in months whose odd or even number does not correspond with the number of the car (see § 8), then the number of the previous month will be entered on the registry. The register must be kept always in a legible condition by the shops.

§ 11. The names of the lubricating stations will be abbreviated as follows on the oiling registers: Adorf = Ad., etc.

§ 12. Every oiling station will keep, in addition to the necessary stencils, paint and brushes, wires for clearing the oil holes and heaters for melting the oil left in the boxes in winter, and suitable keys for opening the special locking axle boxes, also an oil can for each oiler and books for oiling reports for each month, of the proper form (see § 13).

§ 13. The oiling reports serve for registering the amount of oil used, as also the numbers of the cars oiled at each lubricating period (see § 8), and will be filled up in accordance with the following example:

Friesberg Station Consolidated Oil Report,  
Month of August, 1882.  
Cited by Miller, Car Inspector.

Date.....	Oil drawn.		Cars on which the oil was used.		Remarks.....
	Kind of oil.	Kilos.....	Car No.....	Kind and designation of car.	
1	Globe oil.....	1.5	187	Pass. car Saxon R.R.	1
2	On hand.....	5	6,784	Frt. car do.....	1
3	Globe Oil.....	5	etc		
4	"	5			
10	"	5			
	Left on hand.....	26.5			
	Actually used.....	1.0			
		25.5			

§ 14. After oiling, the numbers of the cars oiled, with the date of oiling, must be entered in the oiling report book. The quantity of oil drawn will also be entered in the same book by the officer who gives out the oil. Near the end of each month the book will be turned over to the round-house or station authorities in exchange for a new one, and the officers receiving them will send in the books with a report in the following form to the accounting office of the operating department, by the end of the month, and receive from it the blank books to be given out a month later:

Name.....	Rank.....	Total oil used.		No. of cars oiled.		REMARKS.
		Kind.....	Lbs.....	Pass.....	Freight.....	
Of the oiler.....						
Total.....						

Date and signature of the foreman:

§ 15. The accounting office of the operating department will keep continuous accounts of the consumption of lubricating oil at each separate station, and of the number of cars oiled there.

§ 16. The agents at oiling stations will compare the total amounts shown on the consolidated oil reports with those consumed in other months. If there are any striking discrepancies, the causes must be ascertained, so far as possible, and any abuses discovered must be remedied immediately.

§ 17. Every car coming from the shops after repairs or inspection must have its journals fully oiled, and the cost charged to the operating department; while for cars going into the shops for repairs, the operating department will be credited with the amount of oil found in the boxes at half its original value.

§ 18. Cars of our own and foreign roads which have not been arranged for periodical lubrication (and which may be known by the absence of oiling registers on their sills), will for the present be oiled in the old way by the car inspectors (oilers). A special report of the oil consumption for this purpose will be made, and special rules for doing the work will be observed.

Cars oiled periodically which have hot boxes, while running will likewise be oiled by the trainmen, and if this is without effect, they will be set off at the next station.

§ 19. Until further notice, Globe oil will be used for lubricating axle boxes. In every case deviating from this rule, the Superintendent of Motive Power will issue the necessary instructions, and in case hereafter a mixture of oils should come into use, these instructions shall prescribe the composition of the lubricant.

§ 20. It is hereby made the special duty of car inspectors to observe whether the oiling registers on each car show that it was oiled at the last period where it should have been oiled. If after the expiration of the oiling period the registers do not show this, it must be taken for granted that the car has not been oiled, and at the next lubricating station where the car stops long enough it must be oiled.

#### Rules for Cleaning and Lubricating Other Parts of Cars.

§ 21. Where there are no special regulations on the subject, the wearing parts of the trucks of 8-wheeled cars, the brake spindles, the screw couplings and axle box guides and all other frictional parts of the cars should be lubricated at the oiling stations.

§ 22. Before the parts mentioned in § 21 are oiled, they should be freed from all old dirt sticking to them, and thoroughly cleaned, if necessary by the use of turpentine. The brake spindles and screw couplings will be lubricated with graphite lubricant (a mixture of graphite, oil and tallow), but the wearing surfaces of trucks and axle box guides in passenger cars will be lubricated with Globe oil.

## TECHNICAL.

### The Car Shops.

The Wason Manufacturing Co. in Brightwood, (Springfield, Mass., last week shipped 1 mail, 1 combination and 5 passenger cars to the Jacksonville, Tampa & Key West road.

Mr. Henry Roberts in Hartford, Ct., recently shipped 300 of his woven wire car seats to India for a railroad there. These seats are also in use on South American railroads.

The St. Louis *Age of Steel* states that the Missouri Car & Foundry Co. is now very busy, having received an order for 900 freight cars for the Missouri Pacific road. The company will also probably build 300 coal cars for the same road. The foundry is turning out about 200 car wheels a day.

The North Carolina Car Co. in Raleigh, N. C., is building a number of flat-cars for the Raleigh & Gaston road. They are 34-ft. cars, intended for carrying lumber.

The shops of the Buffalo Car Co. in Buffalo, N. Y., started up Dec. 1 on an order for 300 coal cars for the Buffalo, Rochester & Pittsburgh road.

The Jackson & Sharp Co., in Wilmington, Del., has just shipped two very elegant Woodruff Combined Cars, with sleeping and drawing room apartments, and also buffet attachment. They are finished in mahogany, with hand-polished veneered panels, and berth fronts have silver trimmings, Marks' adjustable folding chairs, and are mounted on 6-wheel trucks, with the 42-in. Allen paper wheel.

### Bridge Notes.

The Smith Bridge Works in Toledo, O., have a number of contracts on hand, and the works are being run full time.

Arrangements are being made to build works in Birmingham, Ala., for the manufacture of iron bridges. It is stated that several Ohio parties have agreed to put capital into the enterprise.

### Iron and Steel.

The old rolling mill at Columbus, O., which has been idle for several years, was to start up this week, having secured several contracts.

The Union Iron Mills of Carnegie Brothers & Co., in Pittsburgh, are busy on some heavy orders for steel rails.

The National Tube Works, at McKeesport, Pa., have placed several large orders for pipe iron. One of 10,000 with the Oliver mill in Pittsburgh.

Chulasky furnace in Northumberland County, Pa., is now in blast. It is leased by T. J. Miles & Co., of Danville, Pa., who are running it.

The Columbia Iron & Steel Co., a new organization, has decided to build works at Uniontown, Pa., the people of that place having given 18 acres of ground for the works and taken \$60,000 of stock.

Sloss furnace in Birmingham, Ala., has now both stacks in blast.

The new Williamson furnace in Birmingham, Ala., has its foundations completed. The blowing engines are being built at the Jefferson Foundry, in Birmingham.

The Cuyahoga Rolling Mill Co., Cleveland, O., has secured a two-year lease, with the privilege of purchasing at a certain price, of the Crucible Steel Works, in Cleveland, and will put the plant in operation at once.

### Manufacturing and Business.

Mr. J. S. Mundy, in Newark, N. J., manufacturer of hoisting engines, is building a large engine for a wrecking barge now under construction for use in New York harbor. The barge will be 125 ft. long, 40 ft. wide and 12 ft. depth of hold, and is calculated to lift 100 tons. The engine has double cylinders and is of 40 H.-P., of Mr. Mundy's patent friction compound geared pattern.

The S. C. Forsaith Machine Co. in Manchester, N. H., is running its works 12 hours a day to fill orders.

### The Rail Market.

**Steel Rails.**—The market has been quiet, but firm, with several large orders placed at \$34 per ton at mill; but \$34.50@ \$35 is asked for small orders. Nearly all the mills are full for the present and are not anxious for increased orders and not likely to make concessions in price. A report is current that the Chicago, Burlington & Quincy Co. has ordered a lot of steel rails of special quality from an English mill, but it lacks confirmation.

**Rail Fastenings.**—Spikes are somewhat higher, being quoted at 2.10 cents per lb. in Pittsburgh. Track bolts are quoted at 2.60@2.85 cents per lb. and splice-bars at 1.65@ 1.75.

**Old Rails.**—There is considerable demand for old iron rails reported. The supply is somewhat short and quotations are \$18.50@ \$19.50 per ton at tidewater. Old steel rails are also higher and are quoted at \$19@ \$20 per ton in Pittsburgh.

### A Virginia Blast Furnace.

The *Virginias* for October says: "We give the returns of the operation of Low Moor Furnace, in Alleghany County, from Nov. 17, 1884, to Nov. 14, 1885, inclusive, a period of 363 days of running time, or 365 days from the lighting of the furnace for this, its third blast. The materials used were: Iron ore, limonite, 88,788 tons; coke, from New River coal, 47,671 tons; limestone, 43,779 tons, a total of 180,238 tons. The pig iron produced was: No. 1, 15,473; No. 2, 15,982; No. 3, 5,465; other grades, 2,029; total, 38,949 tons."

The above represents the operations of 363 days of blast; but about 5.5 days were lost in stoppages during this time, so that the actual running time was 357.5 days.

The averages of materials and products were: Ore used per ton of iron made, 2.28 tons; coke used per ton of iron made, 1.22; limestone used per ton of iron made, 1.12; average daily yield in 363 days, 107.27 tons; average daily yield in 357.5 days, 108.61 tons.

"Of this entire product of a year, amounting to about 39,000 tons, only about 5,000 remain unsold. All this pig iron has been marketed eastward, most of it in New York and New England. It was carried by the Chesapeake & Ohio to Newport News, a distance of 272 miles, and thence it is distributed by water to northern ports. The uniformity and character of the grades of iron made at Low Moor have secured for it regular purchasers; some of it has been purchased for use by the manufacturers of Bessemer steel."

### The Creamer System of Heating and Ventilating Cars.

A Central Vermont passenger car that came down from St. Albans with the Montreal express Saturday, returning the same day, had for heating apparatus Creamer's new hot-air system, an invention scarcely a year old and in use in the New England States as yet only on the Fitchburg road. It was in successful operation and had been tested by cold weather and a crowd of passengers at the upper end of the route. The system is novel for car-heating, although it has all the principles of a hot-air furnace. Solidly built stoves are placed as usual at each end of the car. These have fire-boxes 11 in. in diameter, are fitted with check drafts, and have doors that are securely fastened by springs, and an automatic lid on top so that the fire-box would be entirely closed should the stove be tipped over in case of accident. A hot-air drum of massive iron surrounds the fire-box, having a large register on one side toward the centre of the car, which

throws all the heat in that direction when the hot-air box is closed. This hot-air box of wood, about 8 by 6 in., and furnished with a radiator at every other seat, runs the length of the car floor close to the side. The system of warming by this means is mainly mechanical. The corner car window gives place to the outer opening of the cold-air box, which will present a V-shaped opening in the direction in which the car is going. Through this the air is forced by the motion of the car, either through the heating-drum or directly through the hot-air box, sending a current of warm air or of fresh cold air through the car. Automatic ventilators in the clear story suck out the impure air. The system is under perfect control by valves and is easily regulated. The fire-box may be taken out in summer and a cooler substituted, so that a current of pure air cooled by contact with cold water may be introduced into stifling cars. Wire cloth proves an effective cinder guard. And as the roof ventilators only force out the air from the inside, there are no inner currents. The cars will thus be more free from cinders and dust than with the ordinary plan. The system is claimed to be economical of coal, and is now in use on the Fitchburg, the Baltimore & Ohio, the New York Central, the Long Island and the Pennsylvania railroads, being put into coaches as fast as new heaters are necessary.—*Springfield Republican*, Dec. 1.

### A Locomotive's Long Run without Repairs.

Locomotive No. 137 on the Boston & Albany Railroad, used in the passenger service, has a very remarkable record. It came out of the shops new April 23, 1883, and on Oct. 30, 1885, was sent in for general repairs, having in the meantime—for 30 months and seven days—made daily trips. The average run for the 921 days was 203 miles, or an aggregate of 184,726 miles. During this time only 12 days were lost for repairs, and no repairs were made until April 27, 1884, when the engine had run 78,812 miles. During portions of the months of April and June and the whole of the month of May the engine ran 400 miles every day, making (with extra trips Sundays) 10,910 miles in May, and a total of 26,740 miles in the three months named, or an average of 5,913 miles per month. The 12 days lost for repairs were distributed over the period from April 27, 1884, to Oct. 30, 1885, and, in almost every instance, the repairs were of an unimportant character and in the shape of renewals.

The driving boxes of the engine were of cast iron, but have lately been replaced with steel. The weight of the engine is 42 tons, its cylinders are 18 in. by 22, its driving wheels 68 in. in diameter, and the boiler 52 in. in diameter. There are 231 two-inch tubes, and the steam pressure is 160 pounds.—*Boston Traveler*.

### A School of Brakes.

The Chicago, Burlington & Quincy Co. has what is called "an air-brake car" in operation, and all employés are required to take lessons in the practical workings of the automatic brake. The car is fitted up with all the appliances for the thorough exposition of the principles which the brake works. Three sets of brakes are arranged so that they can be coupled together after the manner in which they appear on the train. In the few hours devoted to study and instruction in the car they learn more than they would in years of experience on the road. The car will remain in each city along the line about two weeks. All trainmen are required to take a course of instruction, and must have a certificate of their competency before allowed to go out on their run.—*Chicago Inter-Ocean*.

Similar school cars have been and are still in use on other lines.

### Underground Electric Cables.

The Standard Underground Cable Co., of Pittsburgh, has lately laid 220 miles of underground wire for the Chicago Bell Telephone Co. The cables laid were of the well-known Waring system, and each cable contained 50 wires. Starting from the telephone exchange, on the corner of Chicago avenue and Clark street, these cables radiate outward in all directions, covering a large district, and providing trunk lines for Chicago avenue, Wells street, La Salle avenue and Michigan street. At the different terminals of the several routes followed, the cables are run up inside of the poles of the air-line routes, to the wires of which the underground conductors are connected. On the "cable poles," as they are termed, trim little boxes, made weatherproof, are fastened, and in these cases are placed the lightning arresters, which form the connection between the overhead and underground wires.

Less than one month was required for this work, despite unfavorable weather and substantial construction.

The cables were laid in heavy wooden boxes 30 in. below the surface, and the boxes filled with hot pitch to preserve the timber and better protect the cables from the possibility of injury. At the telephone exchanges the cables are brought up into the operating room where the wires are distributed as required.

Immediately on completion of the outside work the cables were tested with a mirror galvanometer, first by the Electrician of the Cable Co., who finding them all satisfactory turned them over to the telephone company, who repeated the test before accepting them. Nearly all of the wires are already in service and working satisfactorily.

The copper conductors of the cables are of the best quality of soft copper No. 18 gauge, with a guaranteed conductivity of 98 per cent. of that of pure copper, and the insulation of each wire is far beyond the requirements of the service.

The season just ended was a busy one for the Standard Co. It had just completed the laying of 200 miles of wire, for the Central District & Printing Telegraph Co. of Pittsburgh, when it was awarded the contract for the Chicago work, and within the past two months it has been laying cable in Pittsburgh for the United States Telegraph Co. in Harrisburg for the Baltimore & Ohio, and large quantities for railroad, switch and signal purposes, and in New York for the Fire Department, the latter work embracing all of the wires of the department, from headquarters outward for some distance, and are also building up a considerable trade in "ribbon cables," for inside house work. It is now laying a line of cable, 18 to 20 miles in length, for the Natural Gas Co. of Pittsburgh, which line will extend from the company's office in Pittsburgh to its natural gas wells at Murfreesville, Pa.

### Western Society of Engineers.

The 217th meeting was held in Chicago Nov. 2, Mr. Cregier in the chair.

Two papers were read and discussed: "Amount of Horsepower Used in Propelling Street Cars," by A. W. Wright.

"The Relative Expenses of Some Items of Operating Upon Narrow and Broad Gauge Railroads," by C. H. Hudson.

It was voted that the next meeting should be held at 7:30 p. m., and the Society adjourned.

The 218th meeting was held in Chicago, Nov. 17. Mr. Wright was called to the chair.

A paper by Mr. E. J. Ward, on the Feasibility of an Inverted Siphon Tunnel for Improving the Water Power of the Illinois River at Marseilles, was read and discussed.

The following resolution was adopted:

"Resolved, That it is inexpedient, for the present, to hold more than one monthly meeting, and that the hour of meeting be 7:30 p. m., for the first Tuesday of each month."

The Society then adjourned.





Published Every Friday.

## EDITORIAL ANNOUNCEMENTS.

**Passes.**—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

**Contributions.**—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

**Advertisements.**—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

## THE NEW YORK, LAKE ERIE &amp; WESTERN.

Last week we published the report of the President of this company, which gave few details concerning the business of the year, but showed, among other things, that there was a decrease of \$2,128,000 in the gross earnings of the Erie proper in the year ending with September last, compared with the previous year, and a decrease of \$1,406,000 in working expenses; and that, similarly, there was a very great decrease in the working expenses as well as the gross earnings of the leased New York, Pennsylvania & Ohio road. We said then that no safe judgment of the condition and prospects of the company could be made without an analysis of its working expenses, to ascertain where the great savings were made. There are "savings" in working expenses—and last year there were tens of millions of them in this country—which are simply postponements of inevitable expenditures; and whenever a decrease of expenses has been unusually great it is important to know just wherein the savings were made, by a comparison of the different items of expenses in different years—a work of great labor which we have sometimes undertaken when reports afforded the data and the circumstances seemed to require it.

We are saved the trouble this week by the exceptionally full reports of the First Vice-President and the Comptroller, extracts from which are given elsewhere. The Comptroller's report gives a much fuller balance sheet than ever before, giving information of the highest value in judging the financial condition of the company; and its statistics of traffic, earnings and expenses are presented by the First Vice-President, with comments on almost every item, showing why the changes are what they have been, and, in the matter of working expenses, which this year are exceptionally important, giving in greater detail than the Comptroller's report the particulars of the changes. Thus the report answers just those questions which those interested in the company would be likely to ask in a conference with their officers, with a fullness and frankness which has seldom been equaled, and which should, and doubtless will, strengthen the credit of the company. The fullness of these reports makes unnecessary much of the analysis which we should otherwise have attempted, with of course much less complete data than those accessible to and used by Vice-President Felton and Comptroller Little.

The statements of traffic which we made last week by dividing earnings by average rates were correct, and compared with the previous year there was an increase on the Erie proper of 2½ per cent. in passenger traffic, an increase of 4½ per cent. in coal traffic, a decrease of 12½ per cent. in other freight traffic, and a decrease of 6 per cent. in total freight traffic. The average rate on freight other than coal decreased only 5½ per cent., which, as we remarked last week, is much less than was to be expected in view of the extraordinarily low through rates all the year. Mr. Felton's report says that this as well as the great decrease in traffic was due to the company's declining traffic at a rate less than 18 cents per 100 lbs. from Chicago to New York.

And this, doubtless, had much to do with the great decrease in working expenses. For it was this decrease in traffic, together with an increase from 239 to 252 tons in the average freight-train load, which made possible the decrease of 11 per cent. in freight-train mileage and of 8½ per cent. in the total train mileage (there being no decrease in passenger train mileage). It seems almost incredible that there has been a legitimate decrease of \$1,406,000 (11½ per cent.) in the working expenses; but reasonable enough that the expenses per freight-train mile should have decreased from \$1.24 to \$1.20; yet much the larger part of the decrease in expenses was in the freight expenses—\$1,294,000 out of the \$1,406,000.

It is to be hoped that other trunk lines may be impressed by this example of making money by refusing to do business at a loss. The spectacle of the railroads last September competing with each other to carry freight from Chicago to New York at 12½, 10 and even 8 cents per 100 lbs., when every car-load so secured compelled the hauling of the car back empty—the east-bound being several times as great as the west-bound traffic—does not give one a favorable impression of the intelligence of our railroad managements. Even 13 cents per 100 lbs. is less than 0.3 cent per ton per mile, and the expense doubtless much above that when, as almost always when rates are so low, there is no back load for cars filled at these rates. It will be found that the Erie's decrease in net earnings last year was less than that of any other trunk line, while its decrease in freight traffic was probably the greatest of all, and there is an intimate connection between these two facts. It should not be necessary to argue that a railroad may lose money by doing business at less than cost, but railroads seem generally to act on the principle that they must carry all the traffic they can get, whether at a profit or a loss.

There having been less traffic, there was a reason why the maintenance expenses should be reduced. But of the total decrease of \$1,406,000 in expenses, only \$78,000 in the aggregate was in maintenance expenses—a decrease of 11½ per cent. in maintenance of way and of 3½ per cent. in repairs of locomotives being largely offset by an increase of 13½ per cent. in maintenance of cars and of 72 per cent. in renewals of locomotives. It is true, however, that the maintenance expenses were lower than usual last year. They have been for way and cars for seven years:

Maintenance of—		Maintenance of—	
Way.	Cars.	Way.	Cars.
1878-79. \$2,158,931	\$784,913	1882-83. \$2,308,315	\$1,143,882
1879-80. 1,938,715	861,135	1883-84. 1,958,974	900,157
1880-81. 2,098,906	1,056,805	1884-85. 1,732,062	1,023,566
1881-82. 1,995,368	1,009,662		

Maintenance expenses of locomotives are not given separately in previous reports.

It appears that the expenditures for maintenance of way were less last year than in any other of the seven, and 25 per cent. less than in 1883; but that for maintenance of cars they were exceeded only in 1881 and 1883, and were above the average for the previous six years, which was \$939,617. Per train-mile, the expenses for maintenance of way have varied much less, having been, in cents:

1879.	1880.	1881.	1882.	1883.	1884.	1885.
13.2	13.6	13.2	13.0	15.4	13.9	13.4

Thus the decrease per train-mile is but 3½ per cent. since last year, and but 18 per cent. since 1883; the average for the six years previous to last year was 14 cents, and last year it was 4½ per cent. less.

The maintenance of car expenses per train mile were larger this year than ever before, having been, in cents:

1879.	1880.	1881.	1882.	1883.	1884.	1885.
5.5	6.0	6.6	6.6	7.4	6.4	8.9

The car mileage, however, is now probably considerably larger in proportion to train mileage than it was some years ago, though perhaps not more than for two or three years past.

It appears from this that maintenance of way and cars together cost 22.3 cents per train-mile last year, and that this was more than in any previous year, indicating that the condition of the property has been kept up.

More than half of the decrease in expenses, \$797,000, namely, was in "conducting transportation"—the cost of which cannot be postponed. Of this \$100,000 was in brakemen's wages, \$150,000 in foreign agencies, and \$110,000 in station expenses.

Nearly three-fourths of the reduction of "motive power" expenses was for fuel, less being used and the price being much lower; most of the remainder was in engineers' and firemen's wages, fewer being required for the reduced train mileage. Not an inconsiderable item in the decrease of expenses was \$139,415 (21½ per cent.) in general expenses, \$42,000 of which was in officers' salaries.

It appears then that all but a small part of the savings

in expenses were in items which refer only to the current conduct of business and not at all to the condition of the property.

The result has been a reduction in the cost per ton per mile such as only a few years ago appeared impossible. The Erie used to be counted a hard road to work, but there are few lines in the world which do not exceed its last year's expense of 0.475 cent per ton per mile. It is not really so disadvantageous as was thought, when undue stress was placed on some grades in excess of those of the New York Central, which do not really increase greatly the average expense; and the great coal traffic, chiefly developed within the past six years, enables it to fill many cars that otherwise would go empty, helps to equalize the traffic in the two directions, gives it an exceptionally large average train load, and so helps to make the average cost per ton per mile exceptionally low.

The average receipt, expense and profit per ton and per passenger per mile have been:

Year.	Per ton-mile.			Per passenger-mile.		
	Receipt.	Cost.	Profit.	Receipt.	Cost.	Profit.
1874-75. ....	1.209	0.958	0.251	2.227	1.950	0.277
1875-76. ....	1.098	0.885	0.213	2.202	1.854	0.248
1876-77. ....	0.955	0.752	0.203	1.884	1.472	0.412
1877-78. ....	0.973	0.674	0.299	2.188	1.693	0.495
1878-79. ....	0.780	0.561	0.219	2.091	1.594	0.497
1879-80. ....	0.836	0.534	0.302	2.041	1.361	0.680
1880-81. ....	0.805	0.529	0.276	2.016	1.372	0.644
1881-82. ....	0.749	0.536	0.213	1.947	1.245	0.702
1882-83. ....	0.786	0.532	0.254	2.064	1.324	0.740
1883-84. ....	0.719	0.519	0.200	2.168	1.622	0.546
1884-85. ....	0.656	0.475	0.181	1.788	1.527	0.261

The decrease in the average freight rate from 1884 to 1885 was less than from 1883 to 1884, largely because traffic at the lowest current rates was refused last year. The reduction in the expense per ton per mile from 1884 to 1885 was greater than from 1879 to 1884, there having been but little change from 1880 to 1884. The profit per ton per mile was but 0.022 cent (11 per cent.) less than in 1877, though the rate has been reduced 0.299 cent (31 per cent.) meanwhile. The decrease in the profit was nearly three times as great from 1883 to 1884 as from 1884 to 1885.

The decrease in the average passenger rate was very much greater than in the freight rate (17½ per cent., against 9 per cent.), and the decrease in the expense was less (6 per cent., against 8½), and the profit per passenger-mile was reduced more than one-half. The average passenger train-load remains very small, the low rates not having increased it as might have been expected. From 1880 to 1883 it varied from 55 to 63, and averaged 58; last year it was 46.

We have left little room to speak of the New York, Pennsylvania & Ohio road, on which the course of things was similar, and the decrease in expenses quite as remarkable. Maintenance of way expenses were reduced but 1 per cent.; but car maintenance fell off 18½ per cent. Nearly seven-eighths of this total decrease was in conducting transportation and in motive power, and over half the decrease in motive power expenses was in cost of coal. There was a decrease of 9½ per cent. in train mileage, while there was an increase of 17 per cent. in passenger traffic, and a decrease of only 1½ per cent. in freight traffic, the average train loads of both passengers and freight having increased largely.

The expense per ton per mile was only 0.409 cent, or 14 per cent. less than on the Erie even; but the average rate was only 0.503 cent, and 15½ per cent. less than in 1884, and the profit was 0.099 cent per ton per mile, against 0.181 on the Erie. A very slight increase in rates will very greatly increase this road's profits.

The balance sheet in this year's report deserves particular attention and commendation. Balance sheets may be made of any degree of fullness, from two lines to a statement of every individual asset and liability. They are not usually full enough to show the actual condition of the railroads reporting, but they may easily be made full without giving much information—giving unimportant details and lumping accounts which might look unfavorable, or giving the balance only of accounts where there may be very large amounts on both sides, etc. The chief change from last year on the side of assets is the separation of dues for transportation from other accounts receivable (the former being collectable in the month following the close of the fiscal year, while the others may be less quickly realized), and the introduction of a general head of "contingent assets," in which are placed the bad or doubtful debts, which in the case of this company make a formidable amount—\$151,000 from the Marine Bank, \$1,846,800 from the Chicago & Atlantic Railroad, and \$1,123,000 from other companies for advances, which there is perhaps a better chance of collecting some time.

The changes on this side of liabilities are especially valuable as showing what unfunded debt is past due, and presumably would have been paid if the means were at hand, on much of which interest must be paid, and those liabilities which are simply the current expenses which it was not yet time to pay, like the



September pay-rolls and supply bills, which are a liability at the end of September, but cannot be paid, however large the cash balance may be, until October. Thus two entries are given under "audited vouchers for supplies," one covering September vouchers and the other vouchers previous to September. Also the traffic balances are given for passengers and freight separately, and the amounts due to and due from other roads are given; as well as the balances. And with interest and rentals the amount due and unpaid are given separately. On this side, too, there is a head of "deferred liabilities," which will match the "contingent assets" on the other side, consisting chiefly of the unpaid interest on the second consols, but including also \$249,000 due to the railroad company's own coal companies.

From this it appears that the unfunded debt which the company was carrying Oct. 1 was not more than \$3,400,000, aside from the overdue coupons, while there were about \$2,700,000 of other liabilities which were not strictly due at the close of the year, though they had accrued.

The proposed additions to the funded debt will simply convert debts already existing into another form, except that \$1,000,000 is for a debt that will not be due until next June. On the floating debt—the matured current liabilities—interest already has to be paid, and at a rate higher than the bonds will bear. The addition to the debt will not be as large as the amount of the new bonds, as part of the proceeds go to retire \$727,000 of collateral trust bonds. The company will certainly be in a much better position with this addition to its funded debt than it is now, and with a moderate increase in rates it should be able to meet all its charges, if last year's low cost of transportation can be continued. But the company's officers speak confidently of still further reducing the cost per ton per mile. Certainly the detailed report makes the prospects for the road seem much better than they did before it was made, because it indicates that the expenses which have been put down so vigorously may be kept down.

#### TRACK MAINTENANCE AS AFFECTED BY TRAFFIC.

There are not a few questions connected with railroads—and in fact with everything else—on which reasoning from probabilities will seem to indicate very clearly that this or that ought to be so, but which the facts nevertheless will show to be quite otherwise. One of these fallacies—one which appears continually in discussions of railroad questions—is that, except in the cost of rails (a much less important item than it used to be) and possibly raising and surfacing track, the cost of maintenance of way is very nearly so much *per mile of line*, independent of the number of trains per day over the track, so that, as the number of trains increases, the cost of maintenance of way as a whole should be very much less *per train mile*.

The probabilities seem all in favor of this, for ties and fences rot, and ballast and road-bed wash; frost and snow and weeds have to be looked after, and the track "walked;" masonry, bridges, station buildings, platforms and highway crossings have to be kept up; roadmasters and section foremen paid, much the same whether there are many trains over the road or few. Hence comes the conclusion that if the number of trains doubles or triples, the cost of maintenance of way will increase, indeed, but not in anything like full proportion, so that with twice as many trains the cost of the road department may be half as much again, or with three times as many trains, the cost may be doubled. So far has this reasoning from probabilities been carried, that in some of the most elaborate and complete systems of railroad accounts in existence the above specified items of maintenance of way are classed with the general officers' salaries, sweeping out offices, insurance, advertising and such matters, as things which are not affected at all by the volume of traffic, or so little that it is not worth while considering.

Perhaps all this ought to be so, and perhaps in the future it will be so. It may even be admitted that in a certain narrow sense it is so now, so that for a few specific purposes it is proper to so consider them. But this at least can be said, that so far it has not been so in any broad sense, and we may even go further and say that many reasons indicate that it never will be so.

Singularly enough, the cost of "repairs of road-bed and track" (excluding cost of rails, ties, bridges and buildings and frogs, switches and sidings) is one of the most constant items in the whole list of railroad expenses, whether the comparison be made by percentages of the total expenses or the absolute amount per train-mile. It averages a little over 10 per cent. of the total expenses and from 8½ to 11 cents per train-

mile, the variations being far less, proportionately, than in any other item of maintenance of way (although they also maintain a singularly close average percentage), or even than the variations in such items as train wages, which one might expect to vary more exactly with traffic than any other.

The fact being determined to be a fact, many reasons may be imagined for it, and we may well vary the usual process of first proving a fact and then explaining it, in a case where the result varies so decidedly from what reason seems to indicate, by first considering how it is possible that the result should be as it is—"creating an atmosphere where argument is possible," so to speak—and then presenting the facts which prove abundantly that it is so, both from the experience of the same roads in different years and of different roads in the same year, in each case with widely varying traffic.

A chief cause for this surprising equality of growth in the cost of maintenance of way and of traffic is probably that the expenditure on maintenance of way is, far more than any other large item of expense, an indeterminate item, having no natural limit in either direction. Station agents, operators and freight handlers we must have, but having got enough, only willful extravagance can find a place for more. So when any part of a car or locomotive wears out it must be renewed, but "good running order" is all that is aimed at, and is a tolerably fixed and evident fact. Hence, although the expenditure from year to year may be and is varied "to suit the times," yet what is spent or saved in one year is saved or spent in the next, so that the average must, on the one hand, be maintained and, on the other, cannot be much exceeded. But the maintenance of way department is, from its very nature, a yawning void, where there is always a place to put more money if it can be had, and where there can always be shown some reason for putting it there. The Pennsylvania Railroad spends for maintenance of road-bed and track only some \$2,800 per mile including branches, or perhaps \$5,000 or more per mile on main line only. The Central Railroad of South Carolina gets along with \$350 to \$600 per mile, and some roads perhaps with even less, but one has only to examine the reports of roads of the first class and last class alike to see that there is felt to be a call to spend a little more on the track of each alike; the reason being that while a very little labor will keep the track in passable condition and a little more will make a vast improvement, any additional betterment becomes increasingly more costly, until the last degree of perfection is wholly unattainable in one sense, and in so far as it is attainable is to be reached only at great cost of money and labor. The feelings of a good road-master about his track are very much like the alleged feeling of a woman about her dress: His track never is but always to be in good condition—if he can put a little more work on it and get a little more material.

This results from the nature of the work, and in it we have, almost beyond doubt, the open secret why maintenance of way increases in cost at almost an equal rate with traffic. To keep track within an inch or two of good surface, for example, when it is barely passable, takes but little track labor. To keep it within less than an inch costs not very much more and makes some considerable speed reasonably possible. To keep it within less than half an inch makes a large addition, and corresponds to fair second-class track. To eliminate the next eighth or quarter of an inch doubles the cost of track labor, and to take out still the last eighth or quarter is beyond possibility, and yet very important in so far as it is possible.

The actual state of things in railroad service, as well as the reasons why it should be so, may be shown by a comparison with experience on common highways. A road over a decently good natural soil costs nothing at all, and for a few hundred teams a year answers a very good purpose. Whether there be a hundred or two teams a year more or less will make no discoverable difference with it. Nevertheless, there comes a time when some little working of the road is necessary, and we have the common country dirt road.

Here, too, one or two or a dozen more teams a day will not probably make any difference in the amount of working, and it would appear absurd to say that an increase of travel would not reduce the cost per team of keeping it up. Do not rain and frost make most of the trouble with it? At last comes the point, however, when graveling and macadam becomes necessary, and with that change up goes the cost, not only absolutely, but *per wagon-mile*. Then, as traffic increases, paving becomes necessary, and thereafter at least additional traffic ought, it would appear, to be accommodated very cheaply; but with the traffic and the more perfect road-bed come new expenses, cleaning, lighting,

policing, and what not, and very soon more and more costly paving must be used to give a more and more perfect surface, until at last we reach the extreme limit in such a street as Broadway, New York, over which, at its busiest point, more than two vehicles *per second* pass as an average of the daylight hours—83 per minute, over 2,000 per hour, 22,308 by actual count in 11 hours, and probably some 26,000 or more per day of 24 hours.

With such an enormous traffic as this it surely seems reasonable that the cost of "maintenance of way" *per vehicle* should be immensely less than on roads having either half, or a quarter, or a hundredth, or a thousandth part of that traffic; and yet, when all expenses incident to its character as a thoroughfare are taken into account, such as cleaning, lighting and policing, as well as "raising and surfacing," Broadway is, perhaps, one of the most expensive streets in the world to maintain, not only absolutely, but *per cart-mile*; more expensive in proportion than other city streets of less importance, and far more expensive *per vehicle* than most country roads. We shall not undertake to prove this by statistics, nor even to assert that it can be proved to the full extent surmised; but if it be not fully true, it is so nearly true that the conclusion drawn will not be seriously affected: that "maintenance of highway" increases for all practical purposes in direct proportion with the traffic.

And yet, on every one of the classes of highways mentioned, what seems more reasonable to assume than that the addition of a few more vehicles will have almost no effect on the cost of policing and cleaning and "surfacing?" Immediately and at the moment they do not, but looking only a little farther before and behind, we are justified in assuming that almost every vehicle adds, sooner or later, its direct *pro rata* to almost every expense.

The same conditions might reasonably be expected to hold true in railroad maintenance and to explain a like result. At any rate, whatever the cause, it is a fact that, for every additional train that goes over the road, a nearly fixed percentage of its earnings goes into "repairs of road-bed and track." Thus, we may determine from the United States Census statistics of 1880, that the cost of this item in the various geographical sections was as follows:

	Trains each way per day	Total cost per train-mile	P. c. exps.	Cost repairs road-bed and track	
				Cents per mile	Per train-mile of road
New England	7.4	\$1.05	10.51 p. c.	11.0 cts.	\$574
Middle	9.3	0.902	10.13 "	9.2 "	621
Southern	4.3	0.715	12.12 "	8.7 "	273
Northwestern	4.5	0.88	12.45 "	11.0 "	361
Southwestern	3.0*	0.608	13.50 "	8.3 "	480
Far Western	3.22	1.21	13.63 "	16.5 "	382
Av. U. S.	6.07	.91	11.23 "	10.2 "	\$450

\* Estimated. The report of one road in this small group contains an obvious and large error which vitiates the total.

The differences in volume of traffic in these aggregates, although considerable, are not so striking as to indicate as fully as others the law stated, yet they do strongly indicate it, especially in connection with the following comparison of all the maintenance of way expenses in the same sections:

	New Eng.	Middle States	South.	N. W.	S. W.	Far West.	U. S.
Repairs road-bed and track, p. c.	10.51	10.13	12.12	12.45	13.50	13.63	11.23
Per mile	\$574	\$621	\$273	\$361	\$480	\$382	\$450
Tie renewals p. c.	2.64	2.78	4.30	3.07	4.21	3.48	3.04
Per mile	\$144	\$168	\$97	\$88	\$148	\$98	\$121
Bridges, buildings and fences, p. c.	6.64	4.44	5.80	6.08	3.45	4.95	5.14
Per mile	\$363	\$268	\$131	\$176	\$121	\$139	\$207
Rail renewals p. c.	4.20	3.47	6.16	5.03	3.66	6.81	4.40
Per mile	\$220	\$236	\$210	\$166	\$213	\$158	\$106
Total, p. c.	19.79	17.35	22.42	21.60	21.25	22.06	19.41
Per mile	\$1,081	\$1,051	\$501	\$625	\$749	\$619	\$778
Cost per train-mile	\$1.05	\$0.906	\$0.715	\$0.88	\$0.608	\$1.21	\$0.91

If this table is examined, it will be seen that in every item of maintenance of way—even those which seem most nearly independent of the number of trains, like ties, bridges and buildings, repairs of road-bed and track—it is the cost *per mile of road* which varies, and the cost *per train-mile* or the percentage of the total remains far more nearly constant. In fact, the cost of rails, which one might expect to be almost precisely so much *per train-mile*, comes much the nearest of all to being uniform *per mile of road*. Beginning with the section of heaviest traffic—the Middle States group, which includes Ohio, Indiana and Michigan—the cost of rail renewals, in cents per train-mile, is as follows: 3.50, 4.08, 5.03, 6.08, 6.72, 3.66, averaging 4.43, while that of road and track labor is: 9.2, 11.0, 11.0, 8.7, 16.5, 8.3, averaging 10.2.

Here the item we might expect to be almost uniform *per train-mile*—rails—is more nearly uniform *per mile of road*, while the one we might expect to



vary with traffic far less is very nearly constant therewith. The first may be in part accidental; the last can hardly be.

Individual roads may be compared almost at random with similar indications. The following two roads, not selected in any way except as representing extremes of traffic, may serve as illustrations, the years given being fairly representative:

	Penn. R. R. 1883.	Char., Col. & Aug. 1882.	Av. U. S. 1880.
Trains per day each way (main line)	64.5	3.4	6.1
Repairs road-bed and track (cts. per train-mile)	9.81 cts.	12.36 cts.	10.2 cts.
Total cost of train-mile	86.0 "	87.5 "	91.0 "

Most of the roads of very light traffic fail to give the details of expenses, so that the cost of road-bed and track proper can be separated from the cost of bridges and buildings, rail and tie renewals, etc., and thus show more clearly the point which it is desired to bring out. Taking the rudimentary process of comparing gross expenses for maintenance of way and rolling-stock, and making comparisons of the same road at different dates instead of different roads at the same date, we may deduce a comparison of expenses on five trunk lines for the past 35 years, running back to a period antedating the war, during which, as the table shows, an enormous expansion of train mileage has occurred, ranging from four to seven-fold, while yet the cost of maintaining track has, on the whole, decreased less rapidly than other maintenance expenses. There has been, on each of these lines, a considerable expansion of track mileage as well as train mileage, but this increase has been of branches only, not of main line. Therefore, while due allowance for the effect of this greater trackage would reduce, it will not seriously modify the striking contrast in number of trains per year in spite of which maintenance of way has decreased, by comparison with other items, so little. The presentation of this and some further data, however, must be postponed to another issue.

The past season has been more unfavorable for lake shipments of grain than any that has preceded it. Not only have the rates been very low—made so for all but two months of the season by extremely low rail rates—but the shipments have been very small; and this was so when after the advance of rates rail shipments became small, as well as before. The largest lake shipments in any week of this year were 3,872,330 bushels, in the opening week, which has little significance, as the fleet that has wintered at the upper lake ports, having been loaded during the winter, starts all at once then. There was but one other week this year when lake shipments reached 3,000,000 bushels, and but four when they were as much as 2,500,000 bushels, and the average was only 2,060,000 bushels per week. In 1881 down to the opening of the railroad war the average weekly shipments by lake were 3,325,609 bushels, and during the railroad war until the very bad crops had reduced them in September, the average was still more than 3,000,000 bushels, and the average for the whole season was 2,733,000 bushels. In 1882, when, owing to the bad crop of the previous year, the whole movement was extraordinarily light, the total lake shipments for the season were 5,000,000 bushels greater than this year, though as the season was four weeks longer the average was slightly lower. In 1883 the lake shipments fell below 2,000,000 bushels in only two weeks; in no less than six they were more than 4,000,000 bushels (averaging 4,267,000 throughout September), and for the whole season they averaged 2,934,700 bushels, and were about 34,000,000 bushels more than this year. There is not much other traffic for the grain carriers; the ore trade remained lighter than in previous years, and grain carriers generally draw too much water for the lumber trade. It therefore necessarily means idleness for many vessels when the lake grain shipments are cut down more than one-third, as from 1883 to 1885.

The position of the Baltimore & Ohio with regard to through passenger business makes the prospect of maintaining through fares on the standard basis of \$20 from New York to Chicago very dubious. This company makes it a point that the Pennsylvania Railroad shall provide it with passenger train connections between New York and Baltimore until it gets its own line in operation, as a condition of its maintaining rates from Baltimore and Philadelphia. The Pennsylvania offers to make a contract for ten years to do the Baltimore & Ohio's business between New York and Philadelphia; but naturally the Baltimore & Ohio, having got so far, prefers to complete a line of its own. There is nothing to be said against this, but it is hard to see how

it can be justified in doing all it can to ruin the trunk line passenger business if the Pennsylvania refuses to assist it in building up a competitive business while it is constructing its own line. It is as if a company building a new railroad from Cincinnati to Baltimore, having completed the section from Cincinnati to Parkersburg, should require the Baltimore & Ohio to run special trains for it between Baltimore and Parkersburg while it was building a line of its own between those places; or as if the Wisconsin Central should now ask that it should have special trains between St. Paul and Chicago over the Northwestern or the St. Paul road between Milwaukee and Chicago. It is true that the Pennsylvania once did afford such accommodations; but it is probable that this was done with the hope or expectation that it would prevent the construction of a new line and a permanent diversion of traffic between New York and Baltimore. Without that motive, it naturally is disinclined to help to divert travel from its own line.

The advance in rates from Baltimore to the Western cities is \$3.75 to \$5. The Baltimore & Ohio, however, charges the old rates, and, it is said, declares that it will preserve the existing difference of several dollars between its and the Pennsylvania's rates from Baltimore, etc., which means that the Pennsylvania must abandon this business (which, of course, it will not do) or let the Baltimore & Ohio into New York. In this way not only may the passenger business from Baltimore, etc., be ruined, but the vastly greater business further north be greatly injured, and the Pennsylvania would doubtless suffer much more than the Baltimore & Ohio.

It is quite possible that the Baltimore & Ohio takes this position because of the Pennsylvania's opposition to the former's proposed new line to Staten Island. To cross the Sound between New Jersey and the island, the consent of the United States must be obtained, and it is asserted that the New Jersey Legislature can prevent the construction of the line; and the Pennsylvania Railroad Company is credited with having a very great influence in that Legislature and also considerable in Congress. We do not believe, however, that it will be possible for it to prevent the construction of the road. All the railroads in America could not prevent the opening of a new line between the United States and Canada, still less between one state and another. But the Pennsylvania may be able to delay the opening of the line for a considerable time and if it can it probably will, unless it is likely to lose more than it gains by its policy. What the Baltimore & Ohio is doing will cause it to lose. It is just as legitimate as to throw obstacles in the way of the proposed new road; not much can be said for either policy, except as one may be a defense against the other.

#### Pennsylvania Railroad Earnings and Expenses in October.

The favorable turn in the earnings of this company, shown first in September, continued in October, when the improvement extended to the western system.

The gross and net earnings and working expenses of the lines east of Pittsburgh and Erie in October, for the last 13 years, have been:

Year.	Gross earnings.	Expenses.	Net earnings.
1873.....	\$3,757,311	\$2,132,285	\$1,625,026
1874.....	3,482,587	2,040,548	1,442,039
1875.....	3,272,367	1,829,433	1,442,934
1876.....	4,004,439	1,821,278	2,183,161
1877.....	3,210,938	1,704,704	1,506,234
1878.....	3,215,418	1,655,871	1,559,547
1879.....	3,518,144	1,831,214	1,686,930
1880.....	3,882,715	2,194,321	1,688,394
1881.....	3,672,971	2,317,930	1,355,042
1882.....	4,620,053	2,622,341	2,037,712
1883.....	4,875,345	2,659,197	2,216,148
1884.....	4,417,544	2,524,844	1,922,700
1885.....	4,350,171	2,423,360	1,926,811

Thus the gross earnings and expenses were smaller this year than in any other since 1881, but the net earnings were slightly greater than last year.

Compared with last year and the year before, the changes are:

Since 1884:	Gross earn.	Expenses.	Net earn.
Amount.....	Dec. \$88,373	Dec. \$101,484	Inc. \$13,111
Per cent.....	2.0	4.9	0.7
Since 1883:	Gross earn.	Expenses.	Net earn.
Amount.....	Dec. 516,174	Dec. 235,837	Dec. 280,337
Per cent.....	16.0	8.9	12.2

In September there was a decrease of \$182,000 in gross but a gain of \$6,576 in net earnings compared with last year, and in August a decrease of \$761,588 in gross and of \$502,495 net, and down to the end of August the average monthly decrease in net earnings had been \$290,963, which indicates how great the change has been. The net earnings in October were the largest for 14 months, were exceeded in only one month of last year (August), in two months of 1883 (August and October), in the same two months of 1882, and never before, except in September and October of 1876, the two months of heaviest Centennial travel.

The surplus, over all liabilities, of the lines west of Pittsburgh and Erie has been, in October:

Year.	1879	1880	1881	1882	1883	1884	1885
Amount.....	\$593,182	\$418,170	\$309,894	\$513,300	\$268,893	\$142,833	\$92,595

The surplus was thus less this year than in any other of the seven, but the decrease from last year was only \$50,238, while in September it was \$151,236 and in August \$174,338. Moreover, October is notable as the first month of this year in which this Western system has earned any surplus. Last year there was one in April, July and September, as well as October.

Adding the surplus of this Western system to the net earnings of the Eastern system, we have as the company's profits from both systems in October:

Year.	1879	1880	1881	1882	1883	1884	1885
Amount.....	\$2,279,112	2,106,564	1,664,820	2,550,021	\$2,485,041	2,065,533	2,028,406

Thus the aggregate result is a slight decrease from last year, and a large one from 1883 and 1882, but a large gain over 1881.

For the 10 months ending with October the gross and net earnings and working expenses of the lines east of Pittsburgh and Erie have been:

Year.	Gross earnings.	Expenses.	Net earnings.
1876.....	\$30,343,263	\$18,716,426	\$11,626,837
1877.....	25,216,996	15,793,302	9,423,694
1878.....	26,355,317	15,189,777	10,845,560
1879.....	28,044,356	16,655,416	11,379,040
1880.....	34,137,377	20,021,630	14,115,697
1881.....	36,552,212	21,801,374	14,750,838
1882.....	40,548,834	24,903,620	15,645,214
1883.....	42,761,257	26,473,559	16,287,698
1884.....	40,846,647	25,378,685	15,467,962
1885.....	37,596,806	24,437,022	13,159,784

Thus the gross earnings and working expenses this year were the smallest since 1881, and the net earnings the smallest since 1879. Compared with last year and the year before the decreases are:

Since 1884:	Gross earn.	Expenses.	Net earn.
Amount.....	\$3,249,841	\$941,663	\$2,308,178
Per cent.....	8.0	3.7	14.9
Since 1883:	Gross earn.	Expenses.	Net earn.
Amount.....	5,172,451	2,036,537	3,135,914
Per cent.....	12.1	7.7	19.2

This shows a very serious decline, but at the end of August the decrease in net earnings was still greater, and had been at the rate of 20 per cent. for the eight months. If this had continued, there would have been a decrease in net earnings of \$762,000 in September and October, instead of the actual small increase (\$17,700).

The surplus or deficit of the lines west of Pittsburgh and Erie for the ten months ending with October has been:

Year.	1879	1880	1881	1882	1883	1884	1885
Amount.....	\$702,018	2,514,733	2,578,677	1,580,981	\$1,163,211	5,902,626	1,195,333

The decrease in the profits of this system is \$676,000 from last year, \$2,358,000 from 1883, and no less than \$3,774,000 from 1881—the latter nearly 5 per cent. on the stock of the company at that time.

Adding the surplus of this system to and subtracting its deficit from the net earnings of the system east of Pittsburgh and Erie we have as the income from both systems:

Year.	1879	1880	1881	1882	1883	1884	1885
Amount.....	\$12,081,058	16,629,432	17,339,515	17,226,095	\$17,458,969	14,948,936	11,964,461

The decrease from last year is \$2,984,475, which is more than three per cent. on the present capital stock. Since 1883 the decrease is \$5,494,448, which is 5½ per cent. on the present stock. Of the decrease since last year only \$184,000 has been due to the last two months, however, and the change from an average loss of \$350,000 a month in the past eight months of the year to one of \$92,000 is certainly a very great improvement.

We shall expect a considerable gain over last year, in the November net earnings, at least on the Eastern system, not only because of an improvement in the traffic and rates, but because the month was exceedingly unfavorable last year.

#### The Boston & Albany.

The Boston & Albany Railroad is certainly a "trunk line," but apparently it has a much better control of its rates than most trunk lines, for even the extraordinarily low through rates of last year did not very greatly affect its earnings—nor its traffic, for that matter. The passenger traffic in millions of passenger miles, has been for years ending Sept. 30:

Year.	1878	1879	1880	1881	1882	1883	1884	1885
Amount.....	101.2	101.2	112.7	135.4	151.3	157.3	167.4	167.1

The lower fares tended to increase travel, the hard times to decrease it. The result was no change in the total last year. But the travel grew with very great rapidity after 1879, and a simple arrest of growth shows an unfavorable change. It could not be expected, however, that the travel should continue to increase two-thirds every five years as it did from 1879 to 1884; that would make it four and one-half times as great as it is now by 1900.

The average fare per mile fell from 1.91 cents in 1884 to 1.84 cents in 1885. It first went below 2 cents in 1881. The average rate on what is reported as through travel, which includes nearly (but not quite) all the through, but also considerable local, fell from 2.09 to 2.00 cents; the average on what is reported as local, from 1.82 to 1.76 cents, the local being much lower than the through. This is probably due to the large suburban traffic of the road, carried at very low rates.

The freight traffic has been in millions of ton-miles:

Year.	1878	1879	1880	1881	1882	1883	1884	1885
Amount.....	329.7	325.5	375.5	417.1	374.3	373.6	374.3	398.9

Thus the freight traffic last year was larger than in any other year except 1881, when competing routes were less effective than now. The increase over last year was 6½ per cent. In spite of the low rates, we saw last week that the Erie had suffered a large decrease in its freight traffic in this year, when the Boston & Albany made a gain. The increase was wholly in what is reported as through freight, and in that was 9½ per cent., but the earnings from this freight decreased 5½ per



cent., the average through rate having fallen from 0.782 to 0.672 cent per ton per mile, while the average local rate fell from 1.80 to 1.63 cent—a larger amount but not so large a percentage. Only one-third of the passenger traffic is through, while 71 per cent. of the freight traffic is through. But this 71 per cent. of the freight traffic last year yielded but 51 per cent. of the freight earnings, while the 31½ per cent. of the passenger traffic which the through travel amounted to yielded 34¼ per cent. of the passenger earnings.

The gross and net earnings and working expenses of the Boston & Albany have been:

Year to Sept 30:	Gross earnings.	Expenses.	Net earnings.
1885.....	\$7,208,471	\$5,203,076	\$1,914,795
1884.....	7,046,989	5,785,876	1,861,113
1883.....	8,103,957	6,158,904	1,945,053
1882.....	7,348,276	5,600,991	1,747,285
1881.....	7,271,359	5,688,412	1,582,947
1880.....	7,175,253	5,248,501	1,926,752
1879.....	6,074,155	3,723,835	2,350,320
1878.....	6,472,098	4,413,997	1,858,071
1877.....	6,472,094	4,612,766	1,859,328

The gross earnings, therefore, were the smallest since 1880; the decrease from 1884 was 5½ per cent., and from 1883, when they were largest, 11 per cent.; but the working expenses decreased more than the earnings last year, leaving the net earnings nearly 3 per cent. more than in 1884, and only about 1½ per cent. less than in 1883. The net earnings, however, have not nearly kept pace with the traffic, nor with the gross earnings, having averaged very nearly \$2,000,000 a year for the four years from 1877 to 1880, and only \$1,868,000 for the last four years. On few roads of heavy traffic is so large a proportion of the earnings absorbed by the working expenses. They required 73.4 per cent. of them last year, and 75.8 in 1884. The company has plenty to pay its 8 per cent. dividends, and does not need any more, and when traffic grows, rates go down accordingly. Last year the gross earnings were about the same as in 1880, but the passenger traffic 50 per cent. and the freight traffic 6½ per cent. greater.

Since 1877 there has been a gain of 65 per cent. in passenger traffic and of 27 per cent. in freight traffic, but of only 11½ per cent. in gross earnings and 3 per cent. in net earnings. Besides the net earnings here given, the Boston & Albany has an income from rents, etc., which in 1885 amounted to \$429,500, and since 1879 has never been less than that, and has been once as high as \$304,000—from 2 to 3 per cent. on the capital stock. The interest and rents amount to but \$737,000, so that most of the net earnings are left to the stock. The surplus over the 8 per cent. dividends has been quite narrow in every year since 1881, except 1883.

New York through shipments westward recovered in the second week of November from the dullness of election week, and were above the October averages and a fifth more than in the corresponding week of last year.

The distribution of the Atlantic wheat receipts among the several ports is very different this year from what it was last. For the eight weeks ending Nov. 21 the receipts at each port in the two years were:

	1885.	1884.	Decrease.	P. c.
New York.....	5,482,823	11,398,533	5,915,710	51.9
Boston.....	257,536	430,700	173,164	44.8
Montreal.....	566,832	1,509,198	942,366	64.6
Philadelphia.....	397,890	843,010	445,120	52.8
Baltimore.....	896,745	2,707,984	1,811,239	66.9
Richmond.....	203,942	.....	(Inc.) 203,942	.....
New Orleans.....	3,357	237,856	234,499	99.0
Total.....	7,789,055	17,316,281	9,527,226	55.0

The percentage of the total Atlantic receipts arriving at each port were:

	N. Y.	Boston.	Mont.	Phila.	Balt.	Rich.	N. O.
1885.....	70.4	3.0	7.3	5.1	11.5	2.6	0.1
1884.....	65.8	2.5	9.2	4.0	15.7	.....	1.9

Thus, while the total receipts have fallen off 55 per cent., the receipts at Baltimore have decreased 67 per cent., at Montreal 64½ per cent., and at New Orleans no less than 99 per cent. In fact, the business has been insignificant in amount everywhere, except at New York, and the only places that have received enough wheat for their own bread during the eight weeks this year are New York, Montreal and Baltimore. They, in fact, do not get wheat for their own bread, but flour, which alone makes possible the small receipts of Boston, Philadelphia and New Orleans. The low rail rates have favored receipts at Boston, Philadelphia and Baltimore; but the falling-off of exports affects them much more than New York. But the lack of winter wheat is especially unfavorable to Philadelphia, Baltimore and New Orleans, and this probably had as much as anything to do with their light wheat receipts this year. After navigation closes they usually take a larger share of the business, not because their receipts increase, but because those of New York decrease. Thus, last year in four November weeks New York received 4,920,221 bushels of wheat, in four December weeks only 726,525; but at Philadelphia meanwhile the receipts were 534,770 bushels in November and 585,200 in December, and at Baltimore 1,233,307 in November and 1,028,021 in December. New York in November received nearly three times as much as Philadelphia and Baltimore together; in December, not half as much as the two and 30 per cent. less than Baltimore alone. This state of things, however, did not continue after December, the wheat receipt being more nearly equal at the three ports during the rest of the winter, as follows:

	Jan.	Feb.	March.	April.	4 months.
New York.....	92,479	580,714	964,802	730,870	3,268,865
Philadelphia.....	624,700	356,200	616,300	654,600	2,251,800
Baltimore.....	873,042	708,838	598,530	552,462	2,732,872

If we include December, so as to have the whole season of closed navigation, we shall have for the five months:

	New York.	Philadelphia.	Baltimore.
	3,930,390	2,837,000	3,760,693

Thus, New York and Baltimore received substantially the same quantity of wheat last year, and Philadelphia 25 per cent. less than Baltimore. This was when the country directly west of Philadelphia and Baltimore, through which the Pennsylvania and the Baltimore & Ohio roads have numerous lines and the New York companies much fewer connections under their direct control, had an extraordinary surplus of wheat, while this year it has hardly enough for its own use.

Chicago through rail shipments eastward for the week ending Nov. 28, including only flour, grain and provisions this year and last, incompletely reported, and freights of all kinds in the previous years, by the complete reports, have been as follows in tons:

	1880.	1881.	1882.	1883.	1884.	1885.
Total.....	48,636	46,574	57,206	53,850	49,494	54,317

Thus the shipments this year were more than in any other except 1882, and allowing for the higher class freight, doubtless larger than ever before.

The total shipments and the percentage going by each railroad in each of the last six weeks have been:

	Oct. 21.	Oct. 31.	Nov. 7.	Nov. 14.	Nov. 21.	Nov. 28.
Flour.....	4,412	3,644	3,915	4,571	4,246	6,534
Grain.....	14,628	15,259	14,680	15,114	18,606	6,246
Provisions.....	6,139	7,866	8,991	9,095	11,593	11,537
Total.....	25,179	26,769	27,586	29,890	34,525	54,317
Per cent.:						
C. & Grand T.....	9.3	7.9	11.4	10.7	8.6	14.2
Mich. Cen.....	17.7	21.6	18.4	19.8	20.0	27.6
Lake Shore.....	13.4	14.2	13.1	13.5	13.8	11.2
Nickel Plate.....	7.4	8.1	7.9	11.1	12.4	10.9
Fl. Wayne.....	22.2	19.8	21.0	17.5	10.8	11.3
C. St. L. & P.....	12.0	13.1	11.4	15.6	14.4	9.8
Balt. & Ohio.....	6.0	8.1	7.4	7.9	6.2	6.2
Ch. & Atlantic.....	5.0	7.2	7.4	3.9	4.8	5.6
Total.....	100.0	100.0	100.0	100.0	100.0	100.0

The immense increase last week over the previous week will be noted—nearly 60 per cent. Yet notice had been given before the week to Nov. 21, that after that week higher rates would be charged, and under the rules all the shipments made at Chicago last week had to pay the higher rates, so that it seems astonishing that the shipments should have been the larger last week. But the fact is, in the first place very little of the chief freight, grain, has been shipped from Chicago elevators for some time, so that an unusual proportion of the shipments were billed from points further west; and, in the second place, the report does not cover any considerable shipments made after Friday of the week reported, and whatever was billed at Chicago on the last day of the lower rate—probably a very large amount—is included in the report for the following week—last week.

It will be seen that while the total increase last week over the previous week was 19,792 tons (57½ per cent.), there was no increase in provisions whatever, but a gain of 54 per cent. in flour and of 94 per cent. in grain.

The changes in percentages are considerable, but most of them are such as naturally result from the change in the proportions of the different kinds of freight. The Pennsylvania lines are pre-eminent as provision carriers, usually not as grain carriers, and there being no increase in provisions and a great one in grain, their share fell from 34.2 to 24.6 per cent. of the whole, though they carried 45 per cent. of the provisions. The gain of the Chicago & Grand Trunk cannot be so explained, however. It is a leading provision road, but it carried hardly its usual percentage of this freight last week, but had an exceptionally large share of the grain.

The complete report of Chicago shipments for the week to Nov. 14 makes the total of all freights 43,157 tons, and 1,076 tons more than the week before, while the incomplete report made the shipments of flour, grain and provisions 29,890 tons and 2,304 tons more than the week before. The complete report also shows percentages quite different from those of the incomplete report. For instance, the early report showed 44.4 per cent. to have been taken by the three Vanderbilt roads and 33.1 by the two Pennsylvania roads; the complete report gives 46.0 per cent. by the Vanderbilt and 30.0 by the Pennsylvania lines, and in the case of one road the percentage is 15.6 by one report and 11.1 by the other. This shows that the only Chicago report is a very incomplete one, especially as regards the shares of the different railroads. It has a very decided value, but it is rather as indicating the course of shipments by the several roads from week to week, than for the absolute amount of business or the actual share of any road.

The announcement of the advance of east-bound rates from 20 to 25 cents per 100 lbs., Nov. 23, had less effect than might have been expected on shipments of grain, the one freight which stood ready for shipment, in practically unlimited quantities, by the side of the railroad tracks. For the shipments of grain by rail from the Northwestern markets during the week ending Nov. 21 were only 1,980,212 bushels, against 1,646,457 the previous week, and the increase in rail shipments was wholly at the expense of the water shipments, the total shipments falling off 101,000 bushels, and being the smallest since the first week in August. Moreover, the increase is not at all in the grain which is accumulated in the Western elevators, for the wheat shipments by rail were slightly less than the week before, and the increase was in corn, oats and barley, the stocks of which at Western markets are extremely light. Indeed, the shipments of the Northwestern markets did not increase so much in this week as their receipts, and the increase in their receipts was wholly

in corn. It would seem, then, that the accumulations in Western elevators (nearly all wheat) were not affected by the change in rail rates; that they will remain where they are until some change in the market calls them out, and very probably until navigation opens in the spring. Thus, the railroads are likely to carry grain from the West, the coming winter, only about as fast as the farmers send it to market.

The importance of the traffic in live stock and meats is not sufficiently estimated, and this is a traffic which is now exceptionally large, while the grain traffic is exceptionally small. It has come to this, that the tonnage of meats and live animals delivered at Chicago is now as large as the grain and flour tonnage in some weeks. Thus for the week ending Nov. 28 the receipts were, in tons (live stock approximately):

	1885.	1884.	1883.	1882.
Flour.....	9,700	10,320	11,122	13,200
Wheat.....	10,890	28,560	23,680	12,480
Corn.....	33,600	41,190	30,688	38,892
Rye.....	915	891	3,618	1,404
Barley.....	12,288	6,912	10,848	4,512
Grain and flour.....	67,393	87,873	81,256	70,488
Provisions.....	3,267	2,369	2,715	2,367
Hogs.....	40,523	29,785	33,997	24,210
Cattle.....	22,001	24,030	22,864	19,660
Sheep.....	639	621	474	514
Live stock and provisions.....	66,430	47,865	60,012	46,781
Total.....	133,823	135,678	141,968	117,269

The tonnages of grain and of live stock were thus very nearly the same this year, and compared with last year, the very large decrease in grain is nearly balanced by the very large increase in live stock. The increase is wholly in hogs and provisions, and is attributable to the last two corn crops.

East of Chicago the provisions and live stock form a smaller proportion of the traffic, as most of the hogs and a considerable part of the cattle are packed in Chicago, and the product is not only of less weight than the animals, but it is more widely distributed than grain, going largely to interior western and southern points.

It is of advantage to the railroads that the increase should be in this traffic, because it usually pays larger profits than grain. And it is doubtless generally true that the high-class traffic from the west to the east has increased much faster than the grain traffic, or that it has held its own while the grain traffic was decreasing.

For the six months ending with August the shipments of live stock and dressed beef from Chicago were 428,460 tons, while the freight shipments were 1,437,055 tons, the former 23 per cent. of the whole. This, however, was a period when the grain shipments were made artificially large by carrying below cost. In October, when this was less the case, the freight shipments were 242,693 tons, and the live stock and dressed beef shipments 85,391—the latter 26 per cent. of the whole. In the first two weeks of November, 85,238 tons of freight went to 30,858 of live stock, and the latter was 26½ per cent. of the whole. At the same time, the provision shipments were something like 10,000 tons a week, which would make the live stock and meats equal to 35 per cent. of the whole. With a rational conduct of the business, the profit should be from one-half more to twice as much on the latter as on the grain and flour, wherefore it may easily make the larger returns to the carriers.

The winter packing season opens with a vigor which indicates that if the stock of hogs is short, as reported by the Department of Agriculture, the farmers are in as great haste to get rid of them as if they feared a glut later on or had nothing to keep their hogs on. For the first 18 days of November the number packed is reported to have been 940,447 this year, against 566,034 last year—an increase of 40 per cent. Yet this year has not been very favorable for packing, so far as weather is concerned. The farmers have had the great advantage of a stock of old corn, however, the lack of which made them late in marketing their hogs last year, when most of the increase of the November-February season was made in the last two months of the year. We shall certainly not pack 40 per cent. more hogs this winter season than we did last year, when the number was 6,460,240. That would make the number more than 9,000,000, and the greatest hitherto has been 7,480,648 (in 1879-80). We shall do extremely well if we reach the latter number, which is nearly one-sixth more than last year. Meanwhile the heavy movement goes toward making up for the light grain movement on some roads.

In the note to the record of the performance of the Daft electric motor read before the American Society of Civil Engineers by Robert L. Harris, C. E., an abstract of which appeared in our issue of Nov. 27, some typographical errors occurred which, being corrected, make the record of the performance read as follows:

"Calling the gross weight of train in the record given 10 tons, or 20,000 lbs. [it was estimated at 19,725 lbs.], this performance was as follows:

Rolling friction, say 14 lbs. per ton.....	Lbs.
Grade resistance, say 6 per cent. grade (317 ft. per mile)	140
(6 × 20 × 10).....	1,200
Total tractive pull exerted.....	1,340
Total weight on drivers of motors.....	4,500
Then.....	1,340
4,500 = 0.298, or about 0.30, adhesion.	

"The usual adhesion of a heavy locomotive is from 0.25 (¼) to 0.35 (over ⅓) of the weight on the drivers, ⅓ being not difficult to obtain under favorable conditions. This, however, is with a heavy load per wheel. For so light an engine the adhesion is very high, but may have been helped out somewhat by momentum, without accepting the claim that the electric current appreciably increases the adhesion."

As the grade was not long and was approached by a descent, momentum might so help such a performance as to



make it less remarkable than it otherwise would be, but we are informed that it has been shown by experiment that the adhesion is very materially increased by the electric current, and that this is one of the ends which has been especially kept in view. Some very surprising tests have been adduced which it is proposed to repeat.

It rarely happens that an expert examination of any considerable number of bridges fails to reveal the most serious defects in some of their number. Part of this, no doubt, comes from a natural tendency in the expert to take a dark view of the defects of the structure he is examining. Nevertheless, the result usually reveals enough defects to amply justify the precaution; and the results sworn to last week, as brought out by an inspection of the bridges of the New Jersey Central some two years ago, at least indicates the importance of making such inspections. It is proper to add that evidence in rebuttal was given, although not of a very effectual character, so far as appeared, being largely to the effect that the bridges when constructed had been regarded as first-class. This may well be and yet not affect positive testimony as to later deficiencies, such as that in question, which was offered by Mr. Bonzano, Vice-President and Chief Engineer of the Phoenix Bridge Co., and was in substance as follows:

"One bridge at Middlebrook was strained far beyond the limit of safety, the strain being twice as great as usual. One at Bound Brook had the same faults. Fifteen bridges over streets of Plainfield and Elizabeth were also found unsafe, the strain being unusual and the deflection very great. All were renewed. The bridge over the Pennsylvania Railroad tracks at Newark was one of the most unsafe structures that ever carried a train; while, with regard to the bridge over Jefferson street, Newark, it was a mystery how it supported its own weight; it was the most dangerous structure he ever saw. The renewal of these bridges was a necessity. The Newark Bay draw was also dangerous, and this was temporarily repaired."

Whether or not buffer brakes for freight service will ultimately obtain general favor as against the more powerful but less convenient and more costly air-brakes must be regarded, as yet, among the very doubtful points. The probabilities seem to favor that for some time to come each will have earnest advocates. But whatever may be one's predictions, all must regret to see unfair or untrue arguments influencing those who take either view, and two such appear in the report of the Western Railway Club's discussion of the question in another column.

The first of these unfair arguments is that, with buffer brakes, some one else gets the advantage of them beside the owner, because they operate wherever they are, and hence "wear themselves out" by "doing braking for other people." Under any proper view of the case, that should, it is hardly necessary to say, be regarded as their chief advantage—by far the strongest point in their favor. Certainly the objection should not be thought of for a moment, even by the poorest roads, unless it satisfactorily appeared, not only that the wear was greater because they operated everywhere, abroad as well as at home (which is undoubted), but that the wear was *enough* greater to make the cost to the home road greater than it would be with the other type, which operates on their own road alone. For, unless the cost were considerably greater in the first few years, a more short-sighted policy could hardly be imagined than to consider that an objection which, as soon as the use of the brake became at all general, would be a great mutual advantage and economy.

The second unfair objection rose from an error as to a question of fact. It was objected to the property of the brake that it puts itself on in descending a grade, that this would require the engine to exert a pull going down grade, causing waste of power and fuel, and cutting off the advantage to be gained from momentum for ascending the next grade, which is often very necessary. The buffer brake, however, only operates when the cars are crowding upon the engine, and, in fact, crowding with some considerable force. There is therefore nothing to prevent the engineer running as fast as he pleases, for as soon as he—not pulls out but simply stops holding back—the brakes come off of themselves. In this point also buffer brakes are, theoretically, all that could be desired. The one great question about them is, do they put the brakes on, when they do put them on, with sufficient force to answer practical requirements? That they put them on as forcibly as the air brake is, we believe, not claimed. There is also the further weak point—or rather, the further advantage for air brakes—that when a train breaks in two they do not put the brakes on, and the air brake does.

#### Record of New Railroad Construction.

Information of the laying of track on new railroad lines is given in the current number of the *Railroad Gazette* as follows:

**Asheville & Spartanburg.**—Track laid for thirteen miles south from Asheville, N. C., an extension of 5 miles.

**Boston & Lowell.**—The Woburn Branch is extended from Woburn, Mass., to Wilmington, 4 miles.

**Cloverport.**—Completed from Cloverport, Ky., south by east to Coal Mines, 8½ miles.

**Delaware & Hudson Canal Co.**—A branch is completed from Mechanicsville, N. Y., to Stillwater, 3 miles.

**Dubuque & Northwestern.**—Track laid from Dubuque, Ia., west to Durango, 8 miles.

**Indianapolis & Vincennes.**—The Green County Branch is extended from Island City, Ind., to Linton, 2 miles.

**Kansas City & Southwestern.**—Extended from Winfield, Kan., southwest to Arkansas City, 27 miles.

**Minnesota & Northwestern.**—Extended to Manly Junction, Ia., 17 miles.

**Pennsylvania.**—A branch is completed from Manor, Pa., to Cloridge, 4½ miles.

**San Antonio & Aransas Pass.**—Extended south to Calveras Creek, Tex., 5 miles.

This is a total of 84 miles on 10 lines, making 2,523 miles thus far reported for the current year. The new track reported to the corresponding date for 14 years has been:

	Miles		Miles
1885.....	2,523	1878.....	2,207
1884.....	3,509	1877.....	1,977
1883.....	5,819	1876.....	2,177
1882.....	9,574	1875.....	1,237
1881.....	7,353	1874.....	1,767
1880.....	5,624	1873.....	3,507
1879.....	3,443	1872.....	6,885

These figures include main track only, second tracks and sidings not being counted.

#### NEW PUBLICATIONS.

*Letters from Golden Latitudes.* Issued by the St. Paul, Minneapolis & Manitoba Railway Company.

This pamphlet contains a series of letters written by a correspondent, who describes in detail his impressions of a trip over the various lines of the St. Paul, Minneapolis & Manitoba road, and especially those in the Red River Valley and Northern Dakota. The descriptions are generally bright and interesting, and the narrative contains a good deal of statistical and other information likely to be of service to intending immigrants. Naturally, the favorable side is presented, and the descriptions of farms in the Red River country are made as attractive as possible; but the pamphlet is not by any means a mere "puff," and its statements seem to be in the main fair, and not too highly colored, while it is in itself well written and interesting.

#### THE SCRAP HEAP.

##### A Narrow Escape.

A dispatch from Augusta, Ga., Nov. 28, says: "A serious accident was narrowly escaped to-day by the incoming train on the Port Royal road as it ran on the bridge over the Savannah River. Just below Augusta a drawbridge is used to allow the river steamers to pass, and it works with a circular and lateral motion. The steamer 'Alice Clark' had just passed through the drawbridge, and it was being rolled into position when the train rushed unexpectedly around the curve and on the bridge. The tracks could not be put in perfect position and the train could not stop suddenly, and it would have tumbled into the river but for the prompt work of the bridgeman. He hurried the draw into place, and the locomotive missing the rails jumped on the cross-ties and was stopped before any damage was done. Had the train been a half minute earlier it would have leaped into the river bed, 50 ft. below. The engine was replaced on the track after several hours' delay and the train ran into the city."

##### Quick Work in the Car Shop.

The coach shop boys are noted for the lively work which they can turn out. To see how long it would take four men to build a short way-car, foreman John Diviky had two gangs of four men each start to work at a given time to construct separate way-cars. To stimulate the boys to their very best efforts, the gang which came out ahead were offered as a prize two boxes of that beautiful, clear honey for which the genial John has had a long-time reputation of securing from his bees, and better than which don't exist in the state (we expect to get a box for this compliment). Under the renewed stimulus the boys made things fly around that shop livelier than an old fashioned husking bee, the result being that J. E. Young, H. Kleebe, J. Boffenmeyer, and Theo. Miller captured the honey, having completed the car in just 59 hours, the best record ever made in the Chicago, Burlington & Quincy shops, and defeating their competitors by 5 hours. —*Aurora (Ill.), Beacon, Nov. 27.*

##### A Large Stone Shipped.

The largest single stone ever shipped by any railroad in this country is being loaded on a car at the Erie railroad in Jersey City. The stone is for a monument in Buffalo, is 14 ft. in diameter, weighs 15 tons, and cost \$5,000. The car was prepared especially for the stone, two of the centre sills were cut off and braced, and this stone swung down through the floor. The height of the stone when loaded will be 15 ft. from the track. —*Port Jervis Gazette.*

##### Railroad Young Men's Christian Association.

The railroad department of the Young Men's Christian Association of Minneapolis, Minn., reports for October a total membership of 173 persons, 27 new members having joined during the month. The total attendance at the rooms during the month was 1,029. Nine meetings were held, with a large attendance, and the Secretary reports 76 visits made. The reading rooms are now well supplied with local papers and with almost all the railroad and technical papers, and the attendance is large and increasing.

##### A Terrible Accident.

A dispatch from Little Rock, Ark., Nov. 1, says: "An engine accidentally turned over owing to the sinking of one rail of the track at Gurdon, this state, on the St. Louis, Iron Mountain & Southern road, and M. F. McGinnis, a machinist, who was watching the machinery, which he had just repaired, was caught beneath it. The live coals from the engine fell on his legs, and the steam burst upon his face and neck. He was caught in such a way that the engineer could not extricate him alone, nor could he remove all the fire, but did all in his power to relieve him. Mr. McGinnis bore his torture manfully. When he was dragged from the fire the clothing had all burned from his left leg and the flesh of his left hip was burned to the bone by the coals. His face and neck were scalded and his right side was burned to a crisp. His right leg was also badly burned. He lived 14 hours before death came to his relief."

##### Guarding the President's Train.

A Washington dispatch of Nov. 30 says: "Immediately after the death of Vice-President Hendricks, Robert Garrett, of the Baltimore & Ohio Railroad, tendered to President Cleveland a special train, with every facility afforded by the Baltimore & Ohio system, to take him and his cabinet to Indianapolis and return. President Cleveland decided that if he made the trip he would avail himself of the courtesy. Considering the great public concern for the safety of the President on the way, extraordinary precautions were taken, and probably in the history of railroading there have never been more complete preparations than those made for running the presidential special. Officials over the entire line of the railroad were summoned to Baltimore for conference, and only those high in authority were acquainted with the fact that the presidential party would go over the road. It was arranged that two trains should be run, the first one hour

ahead of the other, and between them pilot engines and track walkers, so that no moment for an hour prior to the coming of the presidential special was there to be any cessation in the personal inspection of the track. The first train was to have two or three extra cars, closed up, so as to create the impression that the presidential party was aboard, this being done to avoid the crowds which might otherwise gather at the stations en route. The second special, which was to leave Washington from a point known only to those in the confidence of the president, was to run one hour behind the first special and be composed of five private cars, namely, Mr. Garrett's car for use of the president, and the cars of Vice-Presidents Spencer and Smith and General Manager Dunham and General Superintendent Lee, for the cabinet. Two engines were ordered to be ready at each division headquarters, and in every instance to be most carefully inspected and thoroughly gone over. Prior to the arrival of the presidential party watchmen were to be placed at every station and crossing throughout the entire system. All trains of whatsoever character were instructed not to move on the west-bound track upon any consideration, from the time of the arrival of the first special until the time of passage of the second, so that any mishap was almost impossible. None of the changes of engines on the presidential special were to be made in the cities, but in each instance at points beyond.

"Late Sunday evening Maj. Pangborn was notified that the President would not go, but that several cabinet officers would, whereupon it was decided that the entire arrangement should stand and the trains be run exactly as they would have been had the President been one of the party. In pursuance of this, the first special left Washington at 1 o'clock yesterday afternoon. The first train will arrive at Indianapolis at 8 o'clock and the second at 9 o'clock this morning."

### General Railroad News.

#### MEETINGS AND ANNOUNCEMENTS.

##### Meetings.

Meetings of the stockholders of railroad companies will be held as follows:

**Boston & Albany,** annual meeting, at the Meionan in Boston, at 11 a. m. on Dec. 9.

**Boston & Maine,** annual meeting, at the City Hall in Lawrence, Mass., at 10:30 a. m., on Dec. 9.

**Eastern,** annual meeting, at the passenger station in Boston, Dec. 9.

**New York & New England,** annual meeting, at the office in Boston, Dec. 9.

**New York, Providence & Boston,** annual meeting, at the office in Providence, R. I., at 10 a. m., on Dec. 9.

**Richmond & Danville,** annual meeting, at the office in Richmond, Va., Dec. 9.

**Richmond & West Point Terminal Co.,** annual meeting, at the office in West Point, Va., Dec. 8.

##### Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

**Boston & Lowell,** 3 per cent., semi-annual, payable Jan. 1.

**Chicago & Northwestern,** 1½ per cent., quarterly, on the preferred stock, and 3 per cent., semi-annual, on the common stock, both payable Dec. 24, to stockholders of record on Dec. 5. The company paid 3½ per cent. on the common stock in June last; 2 per cent. on the preferred in June and 1½ in September.

**Chicago, St. Paul, Minneapolis & Omaha,** 3 per cent., semi-annual, on the preferred stock, payable Dec. 31. This company has changed from quarterly to half-yearly dividend payments.

**Cincinnati, Indianapolis, St. Louis & Chicago,** 1 per cent., payable Dec. 15. The last dividend paid was 1½ per cent., April 16, 1893.

**Delaware & Hudson Canal Co.,** 1½ per cent., quarterly, payable Dec. 10, to stockholders of record on Nov. 24.

**Eastern in New Hampshire** (leased to Boston & Maine), 2½ per cent., semi-annual, payable Dec. 15.

**Philadelphia, Wilmington & Baltimore,** 4 per cent., semi-annual, payable Jan. 2, to stockholders of record on Dec. 15.

#### Railroad and Technical Conventions.

Meeting and conventions of railroad associations and technical societies will be held as follows:

The **Transcontinental Traffic Association** will hold its next meeting in New York, on Monday, Dec. 14.

The **Central Passenger Committee** will hold its next meeting in Cincinnati, on Tuesday, Dec. 15.

The **Master Car-Builders' Club** will hold its regular monthly meetings through the winter at the rooms, No. 113 Liberty street, New York, on the evening of the third Thursday in each month.

The **New England Railroad Club** will hold its monthly meetings at its rooms in the Boston & Albany passenger station in Boston, on the evening of the second Wednesday in each month.

The **Western Railway Club** will hold its regular monthly meetings at its rooms, No. 103 Adams street in Chicago, on the third Wednesday in each month.

#### Foreclosure Sales.

The **Toledo, Cincinnati & St. Louis** road will be sold at public sale in Indianapolis, Ind., Dec. 30, under the concurrent decrees of foreclosure granted by the United States Circuit Courts for the several districts through which the road runs. Both divisions (from Toledo, O., to Kokomo, Ind., and from Kokomo to East St. Louis, Ill.) will be sold at the same time. The purchasers will be allowed to pay in bonds all the purchase money in excess of the amount required to meet the court costs, receiver's debts and other charges established as prior to the mortgages.

The **Texas & St. Louis** road was sold at public sale in Tylor, Tex., Dec. 1, in accordance with the decree of foreclosure granted by the United States Circuit Court. The sale included the entire Texas Division, with all the equipment and other property, and the road was bought for \$1,700,000, by David B. Ogden, of New York, representing the bondholders' committee. The road was purchased in accordance with the agreement of reorganization.

#### Baltimore & Ohio Employees Relief Association.

The October sheet of this Association shows the payment of benefits to members as follows: Main Stem, Transportation Department, 145; Machinery Department, 160; Road Department, 94; Pittsburgh Division, 59; Trans-Ohio divisions, 155; physicians' bills, 108; total, 721.

The Committee of Management has decided to increase the natural death benefit to \$250 until further notice.

#### Western Society of Engineers.

The annual election for officers of this society for the ensuing year will take place at the meeting to be held in the Society's hall at No. 15 Washington street, Chicago, Jan. 5, 1896. Members not expecting to be present can send letter-balls to the Secretary, Mr. L. P. Morehouse.

#### New England Railroad Club.

The regular monthly meeting of this club will be held at the rooms, Boston & Albany passenger station, Boston, on



Wednesday, Dec. 9, at 7:30 p. m. The subjects for discussion are:

1. The Combination of Springs best adapted for use under Cars and Locomotives; which is the most economical for Freight Car Service, Spiral or Elliptic?
2. Is the most comfortable seat for the traveling public now in general use?

All interested are cordially invited to be present at the meeting of the club.

#### Indiana Train Dispatchers' Association.

At the last meeting of the Indiana Train Dispatchers' Association, held in Indianapolis, Nov. 8, the question of amalgamation with the American Train Dispatchers' Association was discussed, and this question will be brought up again at the next meeting, which will be held in LaFayette, Ind., on Sunday, May 9. In addition to the business questions to be then brought forward, a number of subjects of interest to train dispatchers are assigned for discussion, and on each subject two members have been appointed to prepare papers. The subjects include: Uniform System of Train Orders, Qualifications of Railroad Operators, Time Orders, Train Order Signals at Way Stations, Train Dispatching by Special Order, and others of much interest and importance.

#### ELECTIONS AND APPOINTMENTS.

**Atchison, Topeka & Santa Fe.**—The following circular from President Wm. B. Strong announces an appointment heretofore noted. It is dated Boston, Nov. 30:

"Mr. C. W. Smith has been elected First Vice-President of the Atchison, Topeka & Santa Fe Railroad Co., and will assume duties of his office Dec. 1, with headquarters at Topeka, Kan. He will have immediate charge of the Operating and Traffic departments of the road, and officers and employees will respect his orders accordingly."

**Chicago & Northwestern.**—Mr. I. H. Shattuck having resigned, Mr. Jacob B. Heckman has been appointed Superintendent of dining and parlor cars for this company.

**Dakota & Great Southern.**—Mr. J. W. Bishop, of St. Paul, Minn., has been chosen President; Wm. R. Marshall, Vice-President; H. Officers, Secretary.

**Florida Railway & Navigation Co.**—The following from General Superintendent D. E. Maxwell is dated Fernandina, Fla., Nov. 23:

"Mr. L. G. Randolph has been appointed Master Mechanic, vice R. V. Dohoney, resigned, and assumes the duties of said position on this day. His office will be at the shops at Fernandina, Fla., to which place all papers pertaining to this department should be addressed."

**Indiana Train Dispatchers' Association.**—The officers of this association are: President, M. S. Connors; Vice-President, D. E. Finley; Secretary, L. A. Boyd, Indianapolis; Executive Committee, the officers as above, A. A. Zion, H. S. Tousley, F. W. Wilson and J. D. Gunn.

**Kansas & Arkansas Valley.**—The incorporators of this new company are: John G. Adams, John G. Fletcher, G. W. Hughes, Henry Wood, Little Rock, Ark.; Elisha Atkins, F. Gordon Dexter, C. W. Huntington, E. H. Winchester, Boston; R. T. Wilson, New York.

**Kansas City, Wyandotte & Northwestern.**—The directors of this new company are: Kirk B. Armour, E. E. Richardson, J. J. Squier, Kansas City, Mo.; D. E. Cornell, John D. Cruise, E. S. W. Drought, N. McAlpine, Wyandotte, Kan.; George T. Anthony, Leavenworth, Kansas.

**Lawrenceville.**—At the annual meeting in Lawrenceville, Ga., last week, the following gentlemen were elected directors: T. M. Peoples, W. E. Simmons, James D. Spence, R. Brooke, C. W. Bhears, L. L. McCleskey, E. Burkely. Colonel T. M. Peoples was then elected President.

**Louisville, New Albany & Chicago.**—Mr. John H. Garrison is appointed General Southern Passenger Agent, and will have charge of the passenger interests of the company in the territory south of the Ohio River, in the state of Ohio, at Jeffersonville, Ind., and at New Albany, Ind. He will have his headquarters in Cincinnati.

**Louisville, New Orleans & Texas.**—The following circulars are dated Memphis, Tenn., Nov. 28:

"The following changes and appointments are hereby made, to take effect Dec. 1: The office of Assistant Superintendent is hereby abolished. Mr. John Bradley, former Assistant Superintendent, is appointed General Agent, with headquarters at New Orleans. He will report direct to the General Manager. Mr. W. N. Marshall is appointed Master of Transportation, with headquarters at Vicksburg. He will report to the General Superintendent. Mr. R. F. Reynolds, former General Agent at New Orleans, will hereafter have the title of Commercial Agent, and will report to the General Freight and Passenger Agent, as formerly."

"Mr. W. N. Marshall having been appointed Master of Transportation, to take effect Dec. 1, with headquarters at Vicksburg, Miss., all employees in the Transportation Department, including station agents and telegraph operators, will report to him. His orders will be respected and obeyed."

**Manitoba & Northwestern.**—Mr. Alexander McDonald is appointed Assistant General Freight and Passenger Agent, with headquarters at Portage la Prairie, Manitoba.

**Memphis, Birmingham & Atlantic.**—The following circular from this new company is dated Memphis, Tenn., Nov. 23:

"The Memphis, Birmingham & Atlantic Railroad Co. this day assumes possession and control of the railroad, franchises, property, etc., of the Memphis, Selma & Brunswick Railroad Co., and announces the following organization: James B. Pace, President, Richmond, Va.; T. C. Leake, Jr., Vice-President, Memphis, Tenn.; Newman Erb, Solicitor, Memphis, Tenn.; R. H. Temple, Chief Engineer, Memphis, Tenn.; W. P. Dunavant, Superintendent, Memphis, Tenn.; W. C. Watts, Secretary and Treasurer, Memphis, Tenn.; J. W. Daniel Auditor, Memphis, Tenn.; Jas. S. Davant, General Freight and Passenger Agent, Memphis, Tennessee."

**Mississippi & Tennessee.**—At the annual meeting in Memphis, Tenn., Nov. 25, the old directors were re-elected, and subsequently re-elected all the old officers.

**Monson.**—Mr. Warren Nickerson has been appointed Chief Engineer, and Mr. O. H. Tripp Assistant Engineer, with headquarters at Monson, Maine.

**New York, Lake Erie & Western.**—The new board last week elected John King President; S. M. Felton, Jr., First Vice-President; Charles Paine, Second Vice-President; Andrew Donaldson, Third Vice-President; A. R. Macdonough, Secretary; Edward White, Treasurer. The only change is the election of Mr. Donaldson as Third Vice-President, a new office. He has been connected with the company for a year past, acting as Assistant to President King, and was previously Auditor of the Ohio & Mississippi.

**Philadelphia, Newton Square & Chester.**—The officers of this new company are: President, Thomas M. King, Pitts-

burgh, Pa.; Directors, J. V. Patton, Ellenton, Pa.; J. B. Washington, Allegheny, Pa.; Nelson C. Griswold, John S. McCleane, B. D. Smith, B. F. Young, Pittsburgh.

**Pittsburgh, Cincinnati & St. Louis.**—Mr. Frank G. Darlington has been appointed Superintendent of the Cincinnati & Muskingum Valley Division, vice W. F. Black, transferred to the Jeffersonville, Madison & Indianapolis. The appointment took effect Dec. 1.

**Port Royal & Augusta.**—Major John W. Green has been appointed General Manager of this road and its leased lines. The office is a new one, and the appointment is intended to relieve President Raoul, who has heretofore had direct charge of the management. Major Green is also General Manager of the Georgia Railroad.

**Providence, Warren & Bristol.**—At the annual meeting in Providence, R. I., Nov. 30, the following directors were chosen: T. P. I. Goddard, Wm. Goddard, Wm. R. Robeson, Royal C. Taft, Francis M. Weld, Henry A. Whitney. The board re-elected Henry A. Whitney, President; Waterman Stone, Superintendent; B. B. Torrey, Treasurer.

**Richmond & Petersburg.**—At the annual meeting in Richmond, Va., Dec. 1, the following officers were chosen: President, Frederick R. Scott; directors, R. R. Bridges, H. K. Ellyson, D. W. Lassiter, H. Walters, W. T. Walters.

**Rome, Watertown & Ogdensburg.**—Mr. George C. Gridley is appointed General Passenger Agent in place of W. F. Parsons, resigned.

**Roselle & South Plainfield.**—The incorporators of this new company are: Calvin E. Brodhead, Flemington, N. J.; John T. Leigh, Jr., Clinton, N. J.; Patrick Connery, Perth Amboy, N. J.; James R. English, Elizabeth, N. J.; David G. Baird, Beverly, N. J.; John Hood, Camden, N. J.; J. Frank Schaperkotter, Philadelphia.

**Salina, Lincoln & Western.**—The officers of this new company are: President, A. Williams, Salina, Kan.; Vice-President, C. Deems, Lincoln, Kansas.

**Staten Island Rapid Transit Co.**—At a meeting held in New York last week seven directors were elected in the interest of the Baltimore & Ohio Railroad: Thomas M. King and E. J. D. Cross, of Baltimore, and E. A. Leslie, Charles P. Craig, A. C. Rose, D. H. Bates and C. H. Sedgwick, of New York. The six directors who retain their places are: J. Frank Simmons, A. B. Boardman, James M. Davis, H. Holton Wood, Ex Norton and I. K. Martin.

**Union Pacific.**—Mr. Hoyt Sherman, Jr., is appointed General Agent of the Passenger and Ticket departments for District No. 22, with headquarters at Salt Lake City, Utah, vice W. C. Borland, resigned. Appointment took effect Dec. 1.

**Waynesburg & Washington.**—Mr. John E. Davidson, of Pittsburgh, has been elected Treasurer, and J. W. Reimer Auditor. Both are officers of the Pennsylvania Company.

#### PERSONAL.

—Mr. Robert B. Lyle has resigned his position as Purchasing Agent of the Missouri Pacific Railway.

—Mr. W. F. Parsons has resigned his position as General Passenger Agent of the Rome, Watertown & Ogdensburg road.

—Mr. R. H. Soule has resigned his position as Superintendent of Motive Power of the New York, West Shore & Buffalo road. It is reported that Mr. Soule will succeed Mr. Wilder as Superintendent of Motive Power on the New York, Lake Erie & Western road.

—Mr. I. G. McCuen, Superintendent of Machinery of the Atlantic & Pacific Railroad, died very suddenly at Albuquerque, N. M., Nov. 19, of heart disease. He had been ailing for some time, but was apparently in good health up to the evening of his death.

—Mr. Charles H. Fisher, for many years Chief Engineer of the New York Central & Hudson River Railroad, and an engineer of high standing, was recently obliged to retire from active work. It is understood that Mr. Fisher is suffering from softening of the brain and that his mental condition is such that it is not probable he will ever be able to return to duty.

—Mr. Andrew Donaldson, who was last week elected Third Vice-President of the New York, Lake Erie & Western Co., was for many years connected with the Ohio & Mississippi. Entering the service of that company as a clerk, he was appointed after some years Paymaster, Assistant Auditor and finally Auditor. He resigned that position about a year ago and has since been acting as assistant to President King on the Erie. The position of Third Vice-President to which he was chosen is a new one.

—Mr. Peter Donohue died in San Francisco, Nov. 27, aged about 55 years. Mr. Donohue was born in Ireland, and at an early age came to this country and resided for some time in Paterson, N. J., where he learned his trade as machinist. In 1849 Mr. Donohue went to California, where, instead of engaging in mining, as most of the emigrants at that time did, he started a machine shop in San Francisco. He was very successful, and in a few years was at the head of a large establishment. He was also concerned in starting the first gas works in San Francisco, from which he derived large profits. Mr. Donohue was for many years almost the sole owner of the San Francisco & North Pacific road, which he built in large part from his private means, and he was president of the company at the time of his death.

—The Portland Oregonian says of Mr. Thomas B. Morris, whose death in Oakland, Cal., was briefly announced last week: "A telegram from San Francisco announces the death of Thomas B. Morris, at Oakland, on Sunday, from paralysis. Mr. Morris was the son of Wm. E. Morris, a distinguished civil engineer, who visited this coast in 1871, and a grandson of Hon. Thomas Burnside, one of the famous common pleas and supreme judges of Pennsylvania. He adopted civil engineering as a profession, and after performing very creditable work in the eastern states, assisted in building 250 miles of the Union Pacific Railroad in the neighborhood of Promontory Point, under Chief Engineer Grenville M. Dodge, whose confidence and esteem he always retained. He then took charge, in 1871, of the Pacific Division of the Northern Pacific, acting as Principal Assistant to Chief Engineer Col. Wm. Milner Roberts, and it is no small praise of Mr. Morris to say that he was trusted implicitly by that veteran engineer and high souled gentleman. He also had the location and building of the narrow-gauge road in the Willamette Valley, known as the Oregonian Co., Limited. For a number of years Mr. Morris has assisted largely in developing the coal mining interests in Puget Sound, notably the Renton and South Prairie mines. Thomas B. Morris was not only a most skillful engineer, but he was a high-minded and honorable gentleman, a dutiful son, a devoted husband and father, and a faithful friend. His death will be deeply lamented by a large circle of friends, and met by those who knew him best. He was about 42 years old, and leaves a wife and three children."

#### TRAFFIC AND EARNINGS.

##### Petroleum.

The production and shipments of petroleum from the Pennsylvania and New York oil wells for October are given by *Stowell's Petroleum Reporter* as follows, in barrels of 42 gallons:

	1885.	1884.	Inc. or Dec.	P. c.
Production.....	1,874,105	1,901,886	D.	87,781 4.5
Shipments.....	2,050,150	2,510,283	D.	460,133 18.3
Stock, Oct. 31.....	34,763,857	38,192,317	D.	3,428,460 9.0
Producing wells.....	23,062	21,859	I.	1,203 5.5

Of the total output the Allegheny District in New York furnished 12.7 per cent.; the Bradford District in Pennsylvania 37.8; the Warren District 11.9, and the Lower District 37.6 per cent. The production is the largest reported in any month for a year past.

The shipments, although showing a large decrease from last year, were still greater than the production.

The stock on hand decreased 176,045 barrels during the month, that being the excess of shipments over production.

There were 397 new wells completed in October, the largest number reported in any month since May, 1883. At the close of the month there were 355 new wells drilling.

Shipments of oil for the month were divided as follows:

	Crude.	Refined.	Total.	P. c.
New York.....	492,674	92,487	585,161	28.6
Philadelphia.....	522,437	187,734	710,171	34.6
Baltimore.....	57,556	24,954	82,510	4.0
Boston.....	51,239	101,194	152,433	7.4
Cleveland.....	246,728	.....	246,728	12.0
Pittsburgh.....	70,891	.....	70,891	3.5
Local points.....	136,113	66,143	202,256	9.9
Refined at Creek refineries.....	472,512	.....	472,512	22.8

Total.....2,050,150 472,512 2,522,662 100.0

In this table the refined oil is that refined at Creek refineries; it is reduced to its equivalent in crude, so that the total represents the amount of crude oil shipped to each place, whether going in crude or in refined form.

##### Railroad Earnings.

Earnings of railroad lines for various periods are reported as follows:

Ten months to Oct. 31.					
	1885.	1884.	Inc. or Dec	P. c.	
Atch. T. & S. F.	\$12,714,000	\$13,594,870	D.	\$880,270	6.5
Net earnings.....	6,045,404	6,468,729	D.	423,325	6.6
Balt. & Potomac.....	1,099,414	1,017,584	I.	81,830	8.0
Net earnings.....	445,033	337,335	I.	107,698	32.0
Ches. & Ohio.....	2,763,589	2,953,613	D.	190,024	6.4
E. Ten. Va. & G.	3,309,812	3,296,639	I.	13,173	2.3
Net earnings.....	1,061,031	1,135,629	D.	74,598	11.1
Ft. Worth & D.	387,581	401,611	D.	14,030	3.5
Net earnings.....	167,578	182,444	D.	14,866	7.0
Mem. & Charles.....	1,029,954	1,111,864	D.	81,910	7.4
Net earnings.....	175,778	310,900	D.	135,622	43.6
Mexican National.....	1,285,158	1,334,508	D.	49,350	3.7
Mobile & Ohio.....	1,537,070	1,622,443	D.	84,773	5.2
Net earnings.....	265,323	338,031	D.	72,708	21.8
N. Y. & N. England.....	2,495,757	2,452,448	I.	43,309	1.7
Net earnings.....	868,225	827,751	I.	40,474	6.5
Norfolk & West.....	2,251,040	2,214,240	I.	36,800	1.4
Net earnings.....	895,249	963,612	D.	68,363	7.0
Northern Cen.....	4,499,629	4,604,803	D.	105,174	2.3
Net earnings.....	1,809,126	1,770,767	I.	38,359	2.0
Northern Pac.....	9,234,970	10,738,697	D.	1,413,727	13.2
Net earnings.....	4,537,605	5,214,959	D.	677,354	13.2
Pennsylvania.....	37,590,606	40,846,647	D.	3,256,041	8.0
Net earnings.....	13,159,784	15,467,962	D.	2,308,178	14.9
Phila. & Reading.....	2,871,464	2,812,494	D.	58,970	2.0
Net earnings.....	9,995,192	11,046,732	D.	1,051,540	9.5
West Jersey.....	1,113,765	1,157,676	D.	43,911	3.5
Net earnings.....	431,381	47,805	D.	384,576	7.8

Month of October.					
Atch., T. & S. F.	\$1,076,075	\$1,742,039	D.	\$665,964	3.8
Net earnings.....	1,009,759	1,017,528	D.	7,769	0.8
Balt. & Potomac.....	125,145	114,377	I.	10,768	9.4
Net earnings.....	60,380	39,805	I.	20,575	51.3
Ches. & Ohio.....	308,065	270,180	I.	37,885	14.2
Cleve. & Canton.....	27,119	29,861	D.	2,742	9.2
Net earnings.....	6,929	9,096	D.	2,167	24.0
E. Ten. Va. & G.	412,289	411,380	I.	909	0.2
Net earnings.....	200,905	191,708	I.	9,197	4.8
Ft. Worth & D.	43,703	39,867	I.	3,836	9.9
Net earnings.....	23,653	24,713	D.	1,060	4.2
Mem. & Charles.....	133,795	126,245	I.	7,550	6.0
Net earnings.....	49,707	37,510	I.	12,197	32.5
Mexican National.....	128,610	146,252	D.	17,642	12.1
Mobile & Ohio.....	224,878	212,459	I.	12,419	6.3
Net earnings.....	97,021	84,597	I.	12,424	14.6
N. Y. & N. England.....	339,966	306,734	I.	33,232	10.8
Net earnings.....	155,726	165,710	I.	10,000	47.2
Norfolk & West.....	285,965	288,495	D.	2,530	0.9
Net earnings.....	143,707	155,768	D.	12,061	7.7
Northern Central.....	534,010	539,794	I.	5,784	1.0
Net earnings.....	244,126	240,785	I.	3,341	1.4
Northern Pacific.....	1,522,265	1,461,511	I.	60,754	4.2
Net earnings.....	868,614	824,716	I.	43,898	5.3
Pennsylvania.....	4,359,171	4,447,544	D.	88,373	1.9
Net earnings.....	1,935,811	1,922,700	I.	13,111	0.7
Phila. & Reading.....	2,878,370	2,940,541	D.	62,171	2.1
Net earnings.....	1,418,070	1,481,094	I.	63,024	10.6
West Jersey.....	95,704	92,800	I.	2,904	3.1
Net earnings.....	37,488	30,812	I.	6,676	21.5

Third week in November.				
Buff. R. & Pitts.	\$28,934	\$24,383 I.	\$4,551	18.8
Bur. C. R. & No.	78,269	71,554 I.	6,700	9.4
Canadian Pac.	182,000	144,000 I.	38,000	26.4
Chi. & Alton.....	210,819	202,711 I.	8,108	4.0
Chi. & East. Ill.	46,879	36,329 I.	10,550	28.0
Chi. Mil. & St. P.	635,500	549,042 I.	86,458	15.6
Chi. & Northw.	503,500	489,000 I.	14,500	3.0
C. St. P. M. & O.	147,500	128,800 I.	18,700	14.5
Chi. & W. Mich.	28,714	21,332 I.	7,382	33.5
C. I. St. L. & C.	45,435	47,878 D.	2,443	5.1
Denver & R. G.	138,901	107,907 I.	30,994	28.7
Det. Lan. & No.	21,532	24,954 D.	3,422	13.7
Illinois Central.....	209,300	284,982 I.	75,682	35.5
Iowa lines.....	44,800	36,369 I.	8,431	19.0
Ind. Bloom. & W.	60,329	46,590 I.	13,739	28.4
Long Island.....	50,144	41,137 I.	9,007	21.0
Mil. & N. Y.	20,150	201,500 D.	21,600	8.1
Mil. L. S. & W.	31,390	22,625 I.	8,768	38.3
Mil. & Northern.....	11,715	10,011 I.	2,704	27.0
St. L. & San F.	121,914	92,329 I.	29,585	32.1
St. P. & Duluth.....	38,447	35,837 I.	2,610	7.3

Weekly earnings are usually estimated in part, and are subject to correction by later statements. The same remark applies to early statements of monthly earnings.

##### Coal.

Coal tonnages for the week ending Nov. 21 are reported as follows:

	1885.	1884.	Inc. or Dec.	P. c.
Anthracite.....	829,606	900,765	D.	71,159 8.9
Eastern bituminous.....	190,506	205,122	D.	14,616 7.7
Coke.....	59,529	47,659	I.	11,870 24.7

Anthracite trade is active with a continued large demand for the sizes chiefly used for domestic purposes. Coke tonnage continues to show a great improvement.



Cumberland coal shipments for the week ending Nov. 21 were 65,358 tons. Total to Nov. 21 this year, 2,487,581; last year, 2,601,054; decrease, 113,473 tons, or 4.4 per cent.

Actual tonnage passing over the Huntingdon & Broad Top road for the eleven months to Nov. 28 was:

	1885.	1884.	Inc. or Dec.	P. c.
Broad Top coal...	153,740	181,185	D. 27,445	15.2
Cumberland coal...	419,050	376,221	I. 42,829	11.4
Total.....	572,790	557,406	I. 15,384	2.8

The Broad Top coal is mined on the line; the Cumberland is carried through from Mt. Dallas to Huntingdon for the Pennsylvania Railroad.

Anthracite coal tonnage passing over the Shamokin Division, Northern Central road, for the eleven months to Nov. 28 was this year 938,581; last year, 980,714; decrease, 42,133 tons, or 4.3 per cent.

The coal tonnage of the Pennsylvania Railroad Division of the Pennsylvania Railroad, for the eleven months to Nov. 28, was:

	1885.	1884.	Inc. or Dec.	P. c.
Coal.....	10,322,424	9,471,265	I. 851,159	9.0
Coke.....	2,355,634	2,615,352	D. 259,718	9.9
Total.....	12,678,058	12,086,617	I. 591,441	4.9

This includes all tonnage passing over the road, whether originating on the line or received from other roads.

Cumberland coal shipments for the eleven months to Nov. 28 are reported by the Cumberland *Civilian* as follows:

	1885.	1884.	Inc. or Dec.	P. c.
Baltimore & Ohio.....	1,823,591	1,992,550	D. 168,959	8.4
Bedford Div., Pa. R. R.....	376,607	341,485	I. 35,122	10.3
Ches. & Ohio Canal.....	354,409	338,028	I. 16,381	4.9
Total.....	2,554,607	2,672,063	D. 117,456	4.4

Local deliveries are included in the Baltimore & Ohio tonnage. Shipments from mines to the distributing point at Cumberland this year were: Cumberland & Pennsylvania Railroad, 1,653,649; George's Creek & Cumberland, 539,169; West Virginia Central & Pittsburgh, 364,517; total, 2,557,335 tons.

**Cotton.** Cotton movement for the three months of the crop year from Sept. 1 to Nov. 27 is reported by the *Commercial and Financial Chronicle* as follows, in bales:

	1885.	1884.	Inc. or Dec.	P. c.
Interior markets:				
Receipts.....	1,935,217	1,405,429	I. 529,788	18.5
Shipments.....	1,340,682	1,155,511	I. 185,171	16.0
Stock, Nov. 27.....	340,405	267,133	I. 73,272	27.4
Seaports:				
Receipts.....	2,425,282	2,505,451	D. 80,169	3.2
Exports.....	1,321,918	1,392,906	D. 71,078	5.1
Stock, Nov. 27.....	855,738	903,062	D. 47,324	5.3

It should be remembered that a considerable part of the shipments from interior markets reappears in the receipts at the seaports.

The *Chronicle* says: "In the table below we give the receipts from plantations and add to them the net overland movement to Nov. 1, and also the takings by Southern spinners to the same date, so as to give substantially the amount of cotton now in sight:

	1885.	1884.	1883.	1882.
Receipts at the ports to Nov. 27.....	2,425,282	2,505,451	2,420,284	2,442,337
Interior stocks on Nov. 27 in excess of Sept. 1.....	324,555	249,918	325,408	259,215

	1885.	1884.	1883.	1882.
Total receipts from plantations.....	2,749,837	2,755,369	2,745,692	2,701,552
Net overland to Nov. 1.....	151,156	98,274	126,859	93,857
Southern consumption to Nov. 1.....	60,000	50,000	50,000	50,000
Total in sight Nov. 27.....	2,960,993	2,903,643	2,922,551	2,845,409

Net in spinners' takings to Nov. 27..... 518,321 418,737 563,086 500,391  
"It will be seen by the above that the increase in amount in sight to-night, as compared with last year, is 59,350 bales, the increase as compared with 1883 is 31,442 bales and the increase over 1882 is 108,584 bales."

**Duluth Flour Shipments.**

The St. Paul *Pioneer-Press* of Nov. 25 says: "The St. Paul & Duluth's flour business for the season has been much in excess of that of any former years. The exact figures have not yet been prepared, but they will run a little over 1,000,000 barrels. The following figures show the number of barrels furnished the several lines running out of Duluth by the St. Paul & Duluth during October and ten months expiring October 31:

	October.	Ten months.
Boat Line.....	69,137	461,573
L. S. T. Co.....	23,025	103,377
N. W. Transportation Co.....	45,927	323,464
Ward line.....	10,611	32,407
South Shore line.....	1,000	31,500
Other boats.....	149,691	952,322

"The season of navigation at Duluth will close to-day. The last boat to leave is the 'Kasota.' She will clear this afternoon with 19,000 barrels of flour."

**Southern Passenger Committee.**

A dispatch from Atlanta, Ga., Dec. 2, says: "The Southern Passenger Agents' Association, composed of general passenger agents of railroads south of the Ohio and east of the Mississippi, met here to-day with T. M. Emerson in the chair and C. A. Taylor Secretary. The first business taken up was the organization of the so-called passenger pool by the formation of a Southern Passenger Committee, with a General Commissioner. The constitution for such an association was read and adopted, and to-morrow the by-laws reported will be adopted. The trouble between the Western & Atlantic road and the East Tennessee system will be referred to a committee of arbitration under a basis proposed by Mr. Emerson. He says there is no doubt that a permanent peace will be made between the lines."

**Western Freight Association.**

Information has been received here from Milwaukee to the effect that the St. Paul management there has decided to accept the proposition made to it to put an end to the differences now affecting the Western Freight Association. The proposition was to the effect that all dressed beef carried under the contract with Hammond & Co. should be put into the pool at 35 cents per 100 pounds, or 4½ cents less than the tariff rate. This is to be done, although the dressed-beef rate from Omaha to Chicago will continue to be 39½ cents. The proposition is favored by all the lines in interest, so that it is probable that the difficulty between the lines in interest will be averted. The contract between the St. Paul road and Hammond & Co. is for five years, although it was entered into only two or three days before the Western Freight Association agreement was signed.—*Chicago Inter-Ocean*, Nov. 28.

**Buffalo Grain Traffic.**

Buffalo grain receipts by lake from the opening to Nov. 30 have been as follows for four years past, flour in barrels and grain in bushels, flour being reduced to wheat in the totals:

	1885.	1884.	1883.	1882.
Flour.....	2,783,558	2,500,586	2,157,731	1,701,353
Grain.....	48,909,371	55,455,299	65,331,567	48,546,943
Total, bushels.....	62,827,161	67,958,229	75,620,222	57,503,708

The current year shows the heaviest receipts of flour, although the grain receipts fell below those of 1884 and 1883, and were but very little greater than those of 1882.

For the same period shipments eastward of grain received by lake were, in bushels:

	1885.	1884.	1883.	1882.
By canal.....	31,714,027	36,078,407	42,009,204	29,683,880
By rail.....	10,539,545	11,367,710	15,618,306	11,592,075
Total.....	42,253,572	47,446,117	57,627,510	41,275,955
Per cent. by rail.....	24.9	23.0	26.8	27.9

The period of canal navigation has varied very little in the four years, the canal having opened May 11 this year and in 1883, and May 7 in 1884 and 1882. The number of boats cleared at Buffalo up to Nov. 30 was this year 5,655, against 6,281 last year, 6,796 in 1883 and 6,571 in 1882.

**New Passenger Routes.**

The new Wabash route from St. Louis and Kansas City to St. Paul and Minneapolis will probably be opened by Dec. 1. The route heretofore has been from Mason City, Ia., to St. Paul over the St. Paul road, but hereafter the route will be from St. Louis or Kansas City to Albia, Iowa, over the Wabash; from Albia to Lyle, Minn., over the Central Iowa road, and from Lyle to St. Paul over the Minnesota Northwestern road.

A new line between St. Louis and Memphis has been formed by the Missouri Pacific and the Kansas City, Springfield & Memphis companies, through trains being run over the last named road from Memphis to Nettleton, Ark., and over the Missouri Pacific Iron Mountain line from Nettleton to St. Louis.

**New England Railroad Earnings.**

The following are reports of New England railroads for the year ending Sept. 30:

	Earnings.	Expenses.	Net earn.
Nantasket Beach.....	\$22,437	\$13,771	\$8,666
1883-84.....	21,026	23,720	\$2,694
Providence, Warren & Bristol.....	127,825	112,565	15,260
1883-84.....	125,826	123,975	1,851

\* Deficit.

Most of the important lines have reported for the year. The reports generally show reductions in working expenses.

**Passenger Rates.**

On Dec. 1, in accordance with the agreement recently made, all the trunk lines raised their passenger fares to the standard agreed upon. The Baltimore & Ohio, however, in accordance with its notice previously given by it, declined to raise the fares in connection with the other roads, and will maintain until further notice the lower rates at which it has heretofore been selling tickets.

**RAILROAD LAW.**

**Tickets at Reduced Fares—Contract.**

In a recent case before the Iowa Railroad Commission, A. Springer bought for \$31 a ticket entitling him to 25 rides between Prairie City and Ottumwa. This amount reduced the fare to 2 cents per mile; the fare on a ticket regularly purchased at the office was 3 cents per mile. On the face of the ticket, to which his attention was especially called, was a condition to the effect that the time would expire on Sept. 1. Mr. Springer failed to use up the tickets by that time, 11 of the rides being left, and at his request the local agent sent the ticket to the general office and asked an extension of time in which the remaining 11 rides may be used. This the company declined. They figured up his 14 rides at the regular rate of fare, 3 cents per mile, and sent him a voucher for the balance, \$4.96. Mr. Springer thereupon complained to the Commissioners, who, after hearing the case, decide as follows:

"Mr. Springer received the ticket with a full knowledge of the conditions which were upon it; he could have refused it and received back his money. He knew that the station agent had no authority to modify the contract, and if he failed to realize the advantage he expected, it was because he did not comply with the requirements."

"The company proposed, provided he rode 25 times within a limited period, to sell him his rides at 66⅔ per cent. of the usual fare; he did not do so and they properly charged him the full rate. The only object in selling this kind of a ticket at reduced rates is to increase and stimulate travel; if it does not do this, there is no reason for the discount. It is true the ticket was for less than three months, and they were in the habit of selling those tickets running over a period of three months, but it was competent for the company to fix the period when these special tickets should expire, and the complainant knew that they had done so when he took the ticket. We are of the opinion that Mr. Springer has under the circumstances no cause for complaint."

**Injury to Employee—Low Bridge.**

In the case of Rowand against the Baltimore & Ohio & Chicago Co., on appeal, the Indiana Supreme Court holds as follows:

"When a complaint in an action for personal injuries against a railroad company shows the construction by the company of a highway bridge over its railroad track of an insufficient height to enable its brakemen to perform their labors and discharge their duties without great danger and hazard to the life and personal safety of such brakemen; that the defendant's knowledge of the insufficient height, and that it was dangerous and unsafe for its brakemen to perform their labor while passing under the bridge; the plaintiff's ignorance of the facts that the bridge was too low and that it was dangerous for him to perform his duties, and that, while passing under the bridge in the discharge of his duties he was struck, injured, etc., it shows a good cause of action against the railroad company. A railroad company is and ought to be required to construct and maintain its overhead structures in such a manner that its employees can perform their duties with reasonable safety."

**OLD AND NEW ROADS.**

**Asheville & Spartanburg.**—The track on the extension of this road is now laid for 13 miles southward from Asheville, N. C., leaving only 7 miles to reach Hendersonville, the terminus of the old part of the road.

**Atchison, Topeka & Santa Fe.**—This company's statement for October and the ten months to Oct. 31 is as follows:

	October.	Ten months.
Miles worked.....	1885. 2,397	1884. 2,354
Earnings.....	\$1,078,075	\$1,742,059
Expenses.....	668,318	724,531
Net earnings.....	\$1,009,759	\$1,017,528

For the ten months the gross earnings decreased \$880,270, or 6.5 per cent., and the expenses \$456,945, or 6.4 per cent., leaving a decrease of \$423,325, or 6.6 per cent., in the net earnings.

**Baltimore & Ohio.**—Nothing further has been made public with regard to the extension of this company's line from Bound Brook, N. J., to the proposed New York bay terminus on Staten Island. The situation appears to be, that the company will have no difficulty under the general railroad law of New Jersey in constructing its line from Bound Brook to Staten Island Sound, but the construction of the bridge over the sound cannot be undertaken without consent both of Congress and of the New Jersey Legislature. A strong opposition is present in both parties, but it is probable that the consent of Congress can be obtained without difficulty, but the action of the New Jersey Legislature is uncertain. It is possible, however, that much of the opposition to the proposed bridge is intended to discourage the company from undertaking its new enterprise and that, when tested, it may not be found as formidable in action as it is now in words. It is evident, however, that no bill authorizing a bridge to Staten Island will go through the Legislature without opposition.

**Baltimore & Potomac.**—This company's statement for October and the ten months to Oct. 28 is as follows:

	October.	Ten months.
Earnings.....	1885. \$125,145	1884. \$114,377
Expenses.....	64,765	74,479
Net earnings.....	\$60,380	\$39,898

For the ten months the gross earnings increased \$81,830, or 8 per cent., and the expenses decreased \$25,868, or 3.8 per cent., the result being a gain of \$107,698, or 82 per cent., in net earnings.

**Beach Creek, Clearfield & Southwestern.**—It has been reported that this road was to be reorganized through foreclosure of the mortgage, that being considered the only way out of the difficulties surrounding the present organization. The officers of the company state, however, that this report is not correct, the committee having in charge the settlement of the company's affairs not having yet agreed upon a course of action. A report that the outstanding bonds had not been legally issued is also contradicted by authority.

**Boston & Lowell.**—It will be remembered that some time ago notice was given of the termination of the contract between this company and the Concord Railroad Co. By the terms of the notice the contract would have expired Dec. 1, but it is now announced that a conference between the officers of the two companies has removed the differences which had caused the notice to be given and the contract has been renewed.

The work on the new Woburn Division has been completed and the road accepted by the Railroad Commissioners. Trains will begin to run over the new line Dec. 14. The new line starts from the terminus of the old Woburn Branch and runs through Woburn and North Woburn to the main line near Wilmington, a distance of about 4 miles, making a loop or second line from Winchester to Wilmington, about 6 miles in length. The new line has a double track and will be used probably as the main line, the old line being kept in use for local business.

**Boston & Maine.**—The Boston *Advertiser* of Dec. 1 says: "The report that the Boston & Maine and the Fitchburg railroad companies have agreed to build a grand union station is at least premature. No contract has been signed, and there is always room for failure until this event is reached. But the joint committee of the two companies, which has had the subject in hand for some time, is agreed upon the general features of the proposition, and, so far as is known, the directors of both companies are in favor of the idea and of the plan presented by the committee. It is believed, therefore, that shortly all the details will be perfected, a contract signed, and the work of construction entered upon."

"It is proposed to dispense with the present Boston & Maine station in Haymarket square, and with the Fitchburg and the Eastern stations on Causeway street; also with the freight houses of the Boston & Maine, which are between the Fitchburg and the Eastern passenger stations. The ground thus cleared on Causeway street will be the site of the new station. It will be as near the Boston & Lowell station as the Eastern now stands, and will extend east to the street which flanks the Fitchburg station on the west. The plans have been drawn by Mr. N. J. Bradley, and consist of a head-house on Causeway street, back of which will be the train shed. The head-house will have a large, square centre building, with a clock tower on the front. The main entrance will be here, and will comprise five arched doorways into a vestibule. On either flank of this house will extend wings of equal size and height, set back slightly from the front line, and each having a low tower at the outer corner. This building will be three stories high, with a pitch roof and dormer windows, making it practically four stories. The entire first floor is to be used in common by both companies, except in the train-shed, and there the Fitchburg is to have its tracks on the west, the Maine in the centre and the Eastern on the east. Back of the vestibule is to be a large, square general waiting hall. On the right, by the vestibule, will be a bundle room, next beyond the Boston & Maine ticket office, and then the Fitchburg ticket office. Back of the ticket offices (to the east), will be the men's waiting and toilet rooms, and back of the bundle room, in the southeast front, similar rooms for women. On the other, or west side, of the general waiting room will be the news and telegraph room, further on the lunch counter, next the stairs, and last the barber shop. Back of these will be the dining room and serving rooms. The second, third and fourth floors will be devoted to offices. The Fitchburg will occupy the west side and the Maine the east side."

"It will, of course, be greatly to the advantage of these companies, and in most respects to the public, to supplant three old stations, which are inconvenient and unsafe, with a modern structure, having all the facilities that experience suggests as desirable. The only disadvantage will accrue to that portion of the public which now patronizes the Boston & Maine and finds it more convenient to be brought as far into the city as Haymarket square. The loss of this advantage, however, will be more than compensated, in the estimation of many, by the greater safety, convenience and elegance of the new structure, and the quicker time that will be made by the trains, owing to the rearrangement of tracks which will then be possible. At present the tracks of the Maine, the Eastern and the Fitchburg cross each other at grade just before crossing the Charles River into the city. Each train, therefore, has to make two stops, and even when all possible precautions are taken, there is still danger of collisions. These crossings will be obviated by an exchange of land. The Fitchburg track, which comes from the west, will keep on the west side, the Maine will be in the centre, and the Eastern on the east. They will then put in interlocking signals where they are crossed by the Grand Union or belt railroad, and thus avoid the stops otherwise required by law at 'know-nothing' crossings. This, it is estimated, will save nearly or quite five minutes to each train, besides obviating entirely all existing dangers."

"The change will enable the Boston & Maine to sell at a good price some first-class business locations, so that it can



really make money by building a new station. The Fitchburg can probably, also, dispose of its old location for as much, or nearly as much, as the new will cost. The Maine freight houses, which are now between the Eastern and Fitchburg, will have to be removed to Charlestown, where already the Fitchburg and the Eastern freight houses and yards are located. There is an abundance of room on land already owned by the Eastern.

"These changes will be the most important made for many years in the termini of any of the Boston roads. If the contract is signed soon, work will be entered upon at once. In that case it is probable that the new conveniences will come into use in about a year."

**Bradford, Bordell & Kinzua.**—A circular has been issued to the holders of the first mortgage bonds, asking them to subscribe 5 per cent. on the amount of their holdings, in order that the company may resume the payment of the interest on its bonds. Certificates of indebtedness will be received for the amount subscribed. The scheme has already been accepted by the holders of \$400,000 out of the \$500,000 bonds.

**Cape Girardeau Southwestern.**—A survey has been completed for a branch of this road to run from Brownwood, Mo., southward through Bloomfield to Malden, on the Texas & St. Louis road, a distance of about 45 miles. The company will begin work of construction, provided a reasonable amount is subscribed along the line.

**Central Iowa.**—In the Circuit Court at Mason City, Ia., Judge Ruddick has made a decision affecting the Central Iowa and the Burlington, Cedar Rapids & Northern. The case was the application of the state of Iowa for a writ compelling the Central Iowa to operate its own road and run its own trains from Manly Junction to Northwood. It has been in litigation for some years. Judge Ruddick's decision sustains the course pursued by the Railroad Commission, declares void the lease to the Burlington, Cedar Rapids & Northern, and commands the Central Iowa to operate its own track between the points mentioned.

**Cleveland & Canton.**—The earnings of this road (formerly the Connotton Valley) for the three months from Aug. 1 to Oct. 31 were as follows:

	1885.	1884.	1885.	1884.
Gross earnings				
August	\$23,434	\$34,934	\$6,589	\$15,227
September	24,892	29,175	6,467	7,875
October	27,119	29,861	6,929	9,060
Three months	\$75,445	\$93,970	\$19,985	\$32,162

For the three months the gross earnings decreased \$18,525, or 19.7 per cent., and the expenses \$6,312, or 10.2 per cent., leaving a decrease of \$12,213, or 35.2 per cent., in net earnings.

**Cloverport.**—This road is completed from Cloverport, Ky., on the Ohio River south by east to the coal mines, 8½ miles distant. It has been built for the purpose of transporting the product of the mines to the river, but it is proposed to extend it further.

**Chicago & Alton.**—This company has completed a cut-off or loop line on its Kansas City Division between Armstrong, Mo., and Steinetz, a distance of 3 miles. The new line will be used in place of the old road between those two places, having been built to secure a better line and lower grades. It is one of several cut-offs or new locations which the company has been building to shorten and improve its Kansas City line. One between Clark, Mo., and Higbee, 10 miles, was completed in October, and another one, about 10 miles long, from Petersburg westward, will probably be finished during the present month.

**Chicago, St. Louis & Pittsburgh.**—It is reported that this company is desirous of building a new line from Richmond, Ind., to Cincinnati, in order to secure an outlet to that city under its own control. The people of Hamilton, O., have offered to give the right of way through the city for such a line.

**Cincinnati, Indianapolis, St. Louis & Chicago.**—This company has resumed payment of dividends, the directors having declared one of 1 per cent. on the stock, payable Dec. 15, next. The last dividend was paid in April, 1883, and the company then suspended and has since applied its net earnings to the payment of the floating debt, which was chiefly incurred for repairs and improvements of the road made necessary by the extensive damage done by high water in the Ohio River and its tributaries.

**Cincinnati & Muskingum Valley.**—An Indianapolis dispatch states that the courts have decided that the lease of this road to the Pittsburg, Cincinnati & St. Louis Co. is null and void, and that the lessee will accordingly surrender the road to the company Jan. 1 next. The road extends from Morrow, O., to Zanesville, 148 miles, and has been operated by the Pittsburg, Cincinnati & St. Louis for several years, the lease providing that the net earnings shall be paid as rental, the lessee advancing a sufficient amount to pay the interest on the first mortgage bonds, provided it should not be sufficient. The net earnings have not been sufficient, the lessee having been called upon every year to advance almost or quite the full amount of the interest, as the road has barely earned its operating expenses, and the lessee now has a large claim against the road for these advances. Some time ago a suit was begun by certain stockholders to set aside the lease, on the ground that it had been entered into without proper authority and that it was detrimental to the interests of the stockholders of the Pittsburg, Cincinnati & St. Louis.

**Dakota & Great Southern.**—The owners of this projected line have sold it to Ex-Governor William R. Marshall and Mr. J. W. Bishop, of St. Paul, Minn., who expect to build the road. The company was incorporated to build a railroad from Grand Forks Dak., to Tower City, on the Northern Pacific, and thence southward. The right of way for about 75 miles was obtained and some grading done about two years ago.

**Delaware & Hudson Canal Co.**—This company has completed the laying of track on a short branch, extending from Mechanicsville, N. Y., to Stillwater, a distance of 3 miles. The branch is built on the line projected and graded a number of years ago for the Schuylerville & Upper Hudson road.

**Dubuque & Northwestern.**—Track on this road is now laid from Dubuque, Ia., to Durango, 8 miles. Grading is actively in progress from Durango to Farley, 16 miles.

**East Tennessee, Virginia & Georgia.**—The statement for October and the four months of the fiscal year from July 1 to Oct. 31 is as follows:

	1885.	1884.	1885.	1884.
Earnings	\$412,289	\$411,380	\$1,419,633	\$1,371,451
Expenses	211,384	219,672	790,921	805,684
Net earnings	\$200,905	\$191,708	\$628,712	\$565,767

For the four months the gross earnings increased \$47,582, or 3.5 per cent., while the expenses decreased \$14,763, or 1.8 per cent., the result being a gain of \$62,345, or 11.0 per cent., in net earnings.

**Fort Worth & Denver City.**—The statement for October and the fiscal year ending Oct. 31 is as follows:

	1885.	1884.	1885.	1884.
Earnings	\$43,793	\$39,897	\$449,538	\$477,486
Expenses	20,140	15,154	240,696	256,483
Net earnings	\$23,653	\$24,743	\$208,842	\$221,003

For the year the gross earnings decreased \$27,948, or 5.8 per cent., and the expenses \$6,787, or 1.7 per cent., leaving a decrease of \$21,161, or 9.6 per cent., in net earnings.

**Houston & Texas Central.**—The Court has authorized the Receiver to purchase 6,200 tons of steel rails, the cost not to exceed \$35 per ton. They are to be used on the Houston and Waco branches of the road, to replace iron rails.

**Illinois Central.**—For the \$1,500,000 Illinois Central 4 per cent. first mortgage gold bonds of 1951, bids were received from 16 firms, all of which, with one exception, were above par. The bonds were awarded in block to Messrs. Vermilye & Co., of New York. The total amount bid for was \$14,500,000.

**Indianapolis & Vincennes.**—The Green County coal branch of this road has been extended from the former terminus at Island City, Ind., to Linton, 2 miles, and grading is nearly completed from Linton to the Dugger mines, a distance of 6 miles. The mines at Linton have all begun to ship coal over the road and the Dugger mines will follow as soon as the track reaches them.

**James River Valley.**—The correct length of this road, as reported to us by Mr. Edward Barrington, Engineer in charge, is 48.7 miles, from Jamestown, Dak., to La Moure. The stations established with distances from Jamestown, are: Ypsilanti, 12.8; Montpelier, 18.9; Dickey, 32.5; Grand Rapids, 41.1; La Moure, 58.7 miles.

**Kansas & Arkansas Valley.**—This company has filed articles of incorporation to build a railroad from Van Buren, Ark., through the Indian Territory to Arkansas City, Kan., with a branch running westward. The whole length of the road is stated at 320 miles. The incorporators are nearly all connected with the Little Rock & Fort Smith road.

**Kansas City & Southwestern.**—Track on this road has been laid to Arkansas City, Kan., 27 miles southwest from the late terminus at Winfield, and 69 miles from the starting point at Beaumont on the St. Louis & San Francisco road.

**Kansas City, Wyandotte & Northwestern.**—This company has been organized to build a railroad from Kansas City northwest to a point in Custer County, Neb., a distance of about 300 miles.

**Lackawanna & Pittsburgh.**—Mr. John F. O'Brien, General Manager and Agent for the Receiver, informs us that the statement that the road is not operated is not correct. He writes: "As a matter of fact we have been running trains regularly every day since Oct. 26. Since my connection with this road I have paid my employees regularly by the 10th of each month, and am operating on a strictly cash basis in all departments. I had some trouble and opposition at first, but soon overcame it, and everything is now working smoothly and well."

**Louisville & Nashville.**—The following is a comparison of earnings and expenses of this road for the last three months, construction charges in 1885 not having been deducted from net earnings:

	1885.	1884.	1885.	1884.
Gross				
October	\$1,262,340	\$544,084	\$1,291,714	\$592,903
September	1,143,978	464,484	1,145,366	482,982
August	1,077,487	400,452	1,117,313	477,681
Total	\$3,483,805	\$1,409,020	\$3,554,393	\$1,553,566

The decrease in gross earnings for the three months was \$67,588, or 1.9 per cent.; in net earnings, \$144,546, or 9.3 per cent.

**Macon & Covington.**—This company has obtained subscription to its stock to the amount of \$50,000 in Macon, Ga., and had agreed in consideration to establish the repair shops and the headquarters of the road in that city.

**Manhattan.**—This company's statement to the Railroad Commission for the quarter ending Sept. 30 is as follows as submitted to the Railroad Commissioners:

Gross earnings	\$1,599,774
Operating expenses	895,371
Net earnings	\$704,403
Other income	50,276
Total income	\$754,679
Total charges	\$466,110
Net from all sources	\$288,569

The dividend for the quarter was 1½ per cent. on the stock, or \$390,000.

**Memphis & Charleston.**—The gross and net earnings for October and for four months from July 1 have been:

	1885.	1884.	1885.	1884.
Earnings	\$133,735	\$126,245	\$118,630	\$456,763
Expenses	84,088	85,735	294,159	314,988
Net earnings	\$49,707	\$40,510	\$124,471	\$141,775

For the four months the gross earnings decreased \$38,133, or 8.3 per cent., and the expenses \$20,829, or 6.6 per cent., leaving a decrease of \$17,304, or 12.1 per cent., in net earnings.

**Mexican National.**—The following circular to the holders of the first mortgage bonds of this road has been issued under date of Nov. 23:

"The plan signed by you for funding certain coupons and providing for a limited issue under the trust deed of bonds having a priority as to interest, was originally presented at a meeting of English bondholders held in London, June 28, 1885, and was by that meeting recommended to all their fellow bondholders. Since its receipt here this plan has been signed by American bondholders representing a holding of \$9,347,500. The English signatures increase this amount to \$11,000,000. For its consummation, signatures to the amount of \$1,200,000 more (making a majority in interest of the bonds outstanding, say \$12,200,000) are necessary. It is, however, desirable to secure three-fourths, say \$18,000,000 in all, so as to make it the substantial sense of the body of bondholders. It is now, therefore, desirable to bring it to the notice of that large number of holders who do not appear of record anywhere, and it is thought best that this should be done by a Committee who can represent the bondholders in this matter, as well as for the protection of their common interests in all questions that may come up, especially those involving the interests of bondholders in the completion of the link."

"To this end the following gentlemen, owning or representing over \$7,000,000 of the bonds in the United States who have signed this plan with you, have been suggested as

such Committee, with power to add to their number, or to fill vacancies in case of any inability to serve: Spencer Trask, New York; Selah Chamberlain, Cleveland, O.; John DeRuyter, New York; Henry Amy, New York; Samuel B. Parsons, New York; George Burnham, Philadelphia; Charles J. Canda, New York, and Wm. E. D. Stokes, New York. Please return with the least possible delay your assent to the above Committee, if it meets your approval. A majority of all the bonds of the company are held in the United States, and this American committee will invite the co-operation with them, for mutual interest, of the committee recently formed in London to represent European bondholders."

**Mexican Railroad Notes.**—The following notes are from the *Mexican Financier* of Nov. 21:

The press of the country is a unit in demanding the summary punishment of persons tampering with the tracks of the railways. As a rule our railways have managed to avoid serious accidents, and railroading in Mexico is quite as safe as in the United States.

The railroad from Campeche to Calkini is being operated on the section between Campeche and Tenabo. Business appears to be very light even on so short a route, the number of passengers carried in July and August (the last two months reported) being but 3,056 and the number of tons of freight 134. But when the entire road is completed a heavy increase in traffic may reasonably be looked for. The horse railways in the same region do a small business.

**Minnesota & Northwestern.**—The extension of this road from Lyle, Minn., to Manly Junction, Ia., 20 miles, has been completed, the last rail having been laid Nov. 28. At Manly Junction the road makes connection with the Central Iowa.

**Mobile & Ohio.**—The earnings and expenses of this road for October and for the four months from July 1 to Oct. 31 are reported as follows:

	1885.	1884.	1885.	1884.
Earnings	\$225,878	\$212,459	\$620,673	\$640,018
Expenses	128,857	127,862	479,855	506,137
Net earnings	\$97,021	\$84,597	\$140,818	\$133,921

For the four months the gross earnings decreased \$25,385, or 3.9 per cent., and the expenses \$26,282, or 5.2 per cent., leaving a gain of \$897, or 0.6 per cent., in net earnings.

**Monson.**—Surveys are now in progress for the extension of this road from its present terminus at Monson, Me., to Greenville, on Moosehead Lake. As soon as this line is completed another survey will be made from the southern terminus of the road at Monson Junction southward to Athens with the projected Athens & Skowhegan road. The Monson road is now 6 miles long, extending from Monson Junction on the Bangor & Piscataquis road to the granite quarries at Monson, a distance of 6 miles. It is of 2-ft. gauge.

**Nashville, Chattanooga & St. Louis.**—This company's engineers have completed the survey for the extension of the Fayetteville branch from Elora, Tenn., to Huntsville, Ala. The distance is 25 miles, and a very favorable route has been found, involving no expensive work. The road will be built by a new organization, the Nashville & North Alabama Railroad Co., which will be controlled by the Nashville, Chattanooga & St. Louis.

**New York Central Sleeping Car Co.**—This company's statement for the quarter ending Sept. 30 shows gross earnings of \$537,074; expenses of \$399,591, and net earnings amounting to \$137,483.

**New York & New England.**—The award of the sale of the bonds owned by the state of Massachusetts to the syndicate represented by Mr. Higginson, as noted last week, has caused considerable discussion. The protest filed by Messrs. Field and Sage against the rejection of their higher bid, has called out a letter from Governor Robinson, of Massachusetts, in which he states that in the advertisement issued by his order, it was expressly stated that the Governor and Council did not bind themselves to accept the highest or any other bid. He states very plainly that the reasons of the Governor and Council for rejecting the Field bid were that they had reliable information that the intention of Messrs. Field and Sage was to acquire a controlling interest in the second mortgage, then to freeze out the stock and the unsecured creditors, and to reorganize the company through the foreclosure of the mortgage, and under the circumstances, he says, that they consider it the duty of the state to protect the interests of the stockholders and creditors, who are largely citizens of Massachusetts. On this account the sale was made to the Higginson party, whose intention is to support the present management and to continue the plan of settlement of the company's liabilities, which has already been commenced. The Governor says that this appeared to be of more importance than the difference in the amount bid by the several parties. Mr. Field has resigned his position as director of the company, and announces that he has sold all his stock.

**New York, Providence & Boston.**—Charges have been brought by some of the stockholders resident in Rhode Island to the effect that there has been mismanagement of the affairs of the company; that an excessive number of passes have been issued, especially on the branch running from Providence to Warwick Beach, and that the company lost a considerable amount through the failure of the banking house of M. Morgan & Sons, chiefly because the directors had not observed a proper supervision over the Treasurer. The officers and directors of the company deny these charges, and state that they are willing to have a full investigation of the affairs of the company and of their management. A large majority of the stock of this company has always been held by a few persons, and the holdings of the Rhode Island stockholders who desire an investigation are generally small.

**New York, West Shore & Buffalo.**—An application was made last week to Judge Livingston, of the New York Supreme Court, to vacate the injunction restraining the New York Central Co. from leasing this road, which was granted a few days previously by Judge Kennedy, of Syracuse. Judge Livingston declined to grant the order on the ground that he saw no sufficient cause for interfering with the proceedings in progress before another judge.

The order to show cause why the temporary injunction should not be made permanent came up before Judge Kennedy, at Syracuse, Nov. 28, and was argued by counsel for the New York Central Co. and the West Shore, and for the applicant to obtain the issue of the temporary order. On the part of the New York Central it was urged that the proceeding was merely a speculative suit and that the lease of the West Shore road and the guarantee of its bonds were perfectly legal in all respects. The Judge took the papers and reserved his decision.

It is stated that a majority of the persons who hold bonds of the West Shore & Ontario Terminal Co., as collateral for loans, have agreed with Drexel, Morgan & Co. to surrender their bonds for West Shore certificates. Of the terminal bonds \$8,875,000 had been pledged as collateral at 60. Under the agreement the holders received for each \$1,000 bond a certificate for \$500 and 2 per cent. in cash as



interest. This transaction will practically consolidate the terminal property with the West Shore.

The report of the Referee in the foreclosure suit puts the total amount of the Receivers' debts at \$9,346,855, the chief items being \$4,131,512 receivers' certificates and \$1,786,887 equipment lease warrants. Land mortgages and other prior liens amount, in addition, to \$614,375, making a total amount of \$9,961,250 in claims prior to the first mortgage.

**Norfolk & Western.**—This company's statement for October and the ten months to Oct. 31 is as follows:

	October.	1885.	1884.	1885.	1884.
Earnings.....	\$285,365	\$288,485	\$2,251,040	\$2,219,250	
Expenses.....	142,558	132,727	1,355,791	1,255,628	
Net earnings.....	\$142,807	\$155,758	\$895,249	\$963,622	
P. c. of exps....	50	46	60	53	

For the ten months the gross earnings increased \$31,800, or 1.4 per cent., and the expenses, \$100,163, or 7.9 per cent., the result being a decrease of \$68,363, or 7.1 per cent., in net earnings.

**Northern Central.**—This company's statement for October and the ten months to Oct. 31 is as follows:

	October.	1885.	1884.	1885.	1884.
Earnings.....	\$534,010	\$519,704	\$4,499,629	\$4,664,803	
Expenses.....	280,884	270,000	2,693,503	2,834,036	
Net earnings.....	\$253,126	\$249,704	\$1,806,126	\$1,770,767	

For the ten months there was a decrease in gross earnings of \$105,174, or 2.3 per cent., and a decrease in expenses of \$140,533, or 4.9 per cent.; the result being a gain of \$35,369, or 2.0 per cent., in net earnings.

**Northern (New Hampshire).**—Judge Carpenter, before whom the suit to annul the lease of this road to the Boston & Lowell was tried, has made his findings in the case. The judge decides that the Northern and the Boston, Concord & Montreal cannot be held to be parallel and competing lines, as for several years there has been no actual competition between them; he also finds that since the lease there has been a reduction of 20 per cent. in rates. On these findings a case will be made up and submitted to the full bench of the Supreme Court.

**Northern Pacific.**—The following statement is made by this company for October, and for the four months from July 1 to Oct. 31:

	October.	1885.	1884.	1885.	1884.
Earnings.....	\$1,522,285	\$1,481,510	\$1,718,541	\$1,753,111	
Expenses.....	653,671	636,794	2,101,716	2,298,555	
Net earnings.....	\$868,614	\$844,716	\$2,616,825	\$2,454,556	
Charges.....	535,945	508,645	2,025,129		
Surplus.....	\$332,669	\$336,071	\$591,696		

For the four months the gross earnings decreased \$34,570, or 0.7 per cent., and the expenses \$196,839, or 8.6 per cent., leaving a gain of \$162,269, or 6.6 per cent., in net earnings.

**Ohio Central.**—The connection between the two sections of the River Division has been completed, the track having been laid across the bridge over the Ohio River at Point Pleasant, W. Va., and through trains will be run within a few days. Both the bridge and the River Division, it will be remembered, were purchased by the bondholders at the recent sale, and the question of confirming that sale will come up before the United States Court, Dec. 24, when it is not expected that any opposition will be made.

**Omaha & Elkhorn Valley.**—This company has been incorporated to build a branch of the Union Pacific from a point near Fremont, Neb., northward and westward.

**Oregon Railway & Navigation Co.**—This company has sold another \$1,000,000 of bonds to Messrs. Chase & Higginson of New York, who bought the previous \$1,500,000. The price paid for the first lot was 95 and interest, less a commission. The price of the second lot was not a great deal below par net. The company will probably sell no more for the present. It has taken up the scrip due this month, and also has taken up, or is prepared to, the loan on debentures. The outstanding debentures will all have matured by April, 1887, and will be paid with proceeds from the sale of consolidated 5s, or be converted into those bonds.

**Pacific Railroads and the Government.**—The following order has been issued by Gen. Joseph E. Johnston, Commissioner of Railroads in the Interior Department:

"By virtue of the authority vested in the Commissioner of Railroads and with the approval of the Secretary of the Interior, I do hereby present the following system of sworn reports to be rendered to me by railroad companies whose roads are in whole or in part west, north or south of the Missouri River, and to which the United States have granted any loan of credit or subsidy in bonds or lands, which system is to take effect on and after Dec. 31, 1885.

"First—Annual report to be returned to the Commissioner of Railroads to be made on Feb. 1 of each year, and to include business to Dec. 31 preceding.

"Second—Semi-annual report embracing the whole earnings of each road and the whole earnings of the branch, net earnings of each branch, net earnings of each road, the items of charge which make the difference between the gross earnings of each road and its net earnings and of each branch and its net earnings, specifically showing the items composing such difference.

"Third—A monthly report between the 1st and 15th days of each month showing the gross and net earnings of each road during the last preceding month.

"Fourth—Where a portion of any road is subsidized and a portion not subsidized, a separate account and report of the actual gross and net earnings of the subsidized portion of the road and the actual gross and net earnings of the non-subsidized part.

"Fifth—A report at least 10 days in advance of each meeting of stockholders, directors and executive committee of the board of directors, specifying distinctly what business is to be done or submitted for action at such meeting.

"Sixth—A report of each meeting of the stockholders within 10 days of the adjournment of such meeting.

"Seventh—A full report of the minutes of each meeting of the board of directors and of the executive committee of the board of directors to be returned within 10 days after the adjournment of such meeting, including names of directors present and how each voted.

"Eighth—A quarterly report of rates charged during each quarter within 15 days after the close of the quarter for passengers and traffic on each road and each of its branches, both as to through and local traffic on each, and the portion of road or roads to which such rate or rates applied.

"Ninth—A distinct and full report of all special rates, to whom allowed, also all rebates or drawbacks and to whom, and the aggregate amount of each within 15 days after close of each quarter.

"Tenth—All contracts made with any other railroad or

transportation company or companies within 10 days after such contract is made, with a copy of the contract."

**Pennsylvania.**—This company's statement for October shows for that month, as compared with October, 1884, on all lines east of Pittsburgh and Erie, a decrease in gross earnings of \$88,373; a decrease in expenses of \$101,484, and an increase in net earnings of \$13,111. For the ten months to Oct. 31, as compared with last year, the same lines show a decrease in gross earnings of \$3,249,841; a decrease in expenses of \$941,663, and a decrease in net earnings of \$2,308,178.

Carrying out these changes, we have the following statement:

	October.	1885.	1884.	1885.	1884.
Earnings.....	\$4,359,171	\$4,447,544	\$37,596,806	\$40,846,647	
Expenses.....	2,423,360	2,524,844	24,437,022	25,378,685	
Net earnings.....	\$1,935,811	\$1,922,700	\$13,159,784	\$15,467,962	
Per cent. of exps.	55.6	56.8	65.0	62.1	

All lines west of Pittsburgh and Erie for the ten months of 1885 show a deficiency in meeting all liabilities of \$1,195,323, being an increased deficiency of \$676,297, as compared with the corresponding period in 1884. The total net decrease on all lines was thus \$2,984,475 for the ten months.

This company has just completed a new coal branch, extending from Manor Station, Pa., to Cloridge, a distance of 4½ miles. The branch is built to reach several coal mines.

**Pensacola & Atlantic.**—This company has just received from the state of Florida an additional 1,000,000 acres of land lying east and west in the latitude of Palatka. These lands are estimated to be worth \$2.50 per acre. It is expected that another 1,000,000 acres will be received soon, making a total land grant of 4,000,000 acres.

**Philadelphia, Newton Square & Chester.**—This company has been organized to build a railroad from Philadelphia to West Chester and Chester, Pa., about 30 miles in all. The incorporators are all connected with the Baltimore & Ohio.

**Philadelphia & Reading.**—The Receivers' statements give the following figures for the earnings of the railroad for October and the eleven months of the fiscal year from Dec. 1 to Oct. 31:

	October.	1885.	1884.	1885.	1884.
Earnings.....	\$2,878,370	\$2,940,541	\$26,287,122	\$28,400,104	
Expenses.....	1,460,300	1,659,447	15,370,920	16,467,816	
Net earnings.....	\$1,418,070	\$1,281,094	\$10,916,202	\$11,932,288	

For the eleven months this shows a decrease in gross earnings of \$2,112,982, or 7.5 per cent., a decrease in expenses of \$1,066,896, or 6.6 per cent., and a resulting decrease of \$1,046,086, or 8.5 per cent., in net earnings.

The traffic reported is as follows:

	October.	1885.	1884.	1885.	1884.
Passengers.....	2,171,001	2,067,605	21,582,129	22,224,382	
Tons merchandise..	447,109	780,484	7,630,998	8,145,855	
Tons coal.....	1,361,648	1,230,970	11,247,212	10,648,639	
Tons coal on colliers.	50,921	50,970	512,106	494,602	

The month shows an increase in all classes of traffic; for the eleven months there was a decrease in everything but coal.

The statement for the Philadelphia & Reading Coal & Iron Co. is as follows:

	October.	1885.	1884.	1885.	1884.
Earnings.....	\$1,837,566	\$1,729,622	\$14,084,637	\$14,851,027	
Expenses.....	1,901,471	1,667,457	14,428,363	15,001,695	
Net or deficit.. D.	\$63,905	N. \$62,165	D. \$343,726	D. \$150,668	

Here there was for the eleven months a decrease in gross earnings of \$766,390 or 5.2 per cent., and a decrease in expenses of \$573,332, or 3.8 per cent., leaving an increase in deficit of \$193,058, or 128.1 per cent.

The coal mined from the company's lands was as follows:

	October.	1885.	1884.	1885.	1884.
By company.....	569,616	547,762	4,688,628	4,334,531	
By tenants.....	80,551	70,215	719,705	679,956	
Total.....	650,167	617,977	5,408,333	5,014,487	

There is shown here an increase in coal mined, which was not accompanied by an increase in earnings.

The joint net earnings of both companies were as follows:

	October.	1885.	1884.	1885.	1884.
Railroad Co.....	\$1,418,070	\$1,281,094	\$10,916,202	\$11,932,288	
Coal & Iron Co.	\$63,905	\$62,165	\$343,726	\$150,668	
Total net.....	\$1,354,165	\$1,343,259	\$10,572,476	\$11,781,950	

\* Deficit.

The increase in the total net earnings for the month was \$10,906, or 0.8 per cent.; the decrease for the year was \$1,209,144, or 10.2 per cent. The expenses above do not include anything for interest or rentals, the net earnings being the sums from which those charges are to be paid.

The plan of settlement finally brought forward by the reorganization trustees has been made public by them as follows:

**Consolidated and Improvement Mortgages.**—For the payment of sinking funds of these mortgages now in arrears, for the fulfillment of the sinking funds as they may mature hereafter, and for the ultimate payment of all loans having prior lien to the present general mortgage, a new mortgage shall be created to secure bonds payable in 50 years, and bearing a rate of interest not exceeding 5 per cent. per annum. The trustee shall be empowered to raise sufficient money to buy the coal and iron mortgage now covered by the present general mortgage, either by a pledge of the same mortgage or by the pledge of the property acquired in case of its foreclosure, or from the proceeds of the above settlement mortgage.

**General Mortgage.**—Each holder of the old general mortgage shall receive a \$1,000 bond of the new general mortgage bearing 3 per cent. interest. To equate the amount due on coupons maturing on Jan. 1, 1885, and subsequent thereto, such holder shall receive first preferred stock at par, and to equate the interest on the bond in the future at 5 per cent. per annum, such holder shall receive sufficient preferred stock based upon the assumed return of 5 per cent. per annum to effect such equation. The new general mortgage shall be made to secure \$30,000,000, and the bonds shall be made payable in 100 years, with the privilege of conversion into common stock at par. The general mortgage scrip, now overdue, shall be paid out of the moneys realized from assessments.

**Income Mortgage, Convertible Adjustment Scrip and First Series 5 per cent. Consols.**—Holders of income mortgage bonds, convertible adjustment scrip, and first series 5 per cent. consols, shall pay a cash assessment of 10 per cent. and shall receive for every \$1,000 bond and overdue surplus; \$100 first preferred stock; and \$1,000 second preferred stock.

**Second Series 5 per cent. Consols, Convertible 7s and Debentures of Philadelphia & Reading Railroad Co. and**

**Philadelphia & Reading Coal & Iron Co.**—Holders shall pay a cash assessment of 20 per cent., and shall receive for each \$1,000 and overdue coupons \$200 first preferred stock and \$1,000 common stock.

**Unsecured Claims.**—All unsecured claims (duly proven), whether funded or floating, shall receive the negotiation accorded to debenture bonds.

**Preferred and Common Stock.**—Holders shall pay a cash assessment of \$10 per share, and shall receive an equal number of shares of common stock of the new company.

**Deferred Income Bonds.**—Holders shall pay a cash assessment of 2½ per cent. of the principal of their present holdings, and shall receive for each \$1,000, \$200 common stock.

**First Preferred Stock.**—To be entitled to earnings beyond fixed charges, up to 5 per cent., non-cumulative, with right of conversion into common stock.

**Second Preferred Stock.**—To be entitled to earnings (after first preferred has received 5 per cent.) up to 5 per cent., non-cumulative, with like privilege of conversion into common stock.

The trustees support their plan by a long argument, presented in circular form. It does not appear to meet with much approval or support from any quarter, although further discussion may bring out some advocates. The general opinion is still that it will not be possible to reorganize the company without a foreclosure.

**Pittsburgh, Cincinnati & St. Louis.**—Indianapolis dispatches report that this company will surrender the lease of the Cincinnati & Muskingum Valley road on Jan. 1, next, in pursuance of a decision of court in the suit brought some time since.

**Portland & Ogdensburg.**—The United States Circuit Court sitting at Portsmouth, N. H., last May, issued a decree of strict foreclosure in the suit of the Mercantile Trust Co. against the Portland & Ogdensburg Railroad Co. that the railroad company, of those claiming under it, should pay into the registry of the court within six months \$1,590,744, the amount of over-due bonds and coupons of interest due May 2, 1885, to redeem the mortgage bonds of Nov. 1, 1871. The six months elapsed recently and the Clerk of the Court has signed a certificate that the sum had not been paid. This default debars the company from redeeming any of its mortgages, and makes Messrs. Miliken, Webb and Jose, as trustees, absolutely the owners of the railroad and all its appurtenances.

**Roselle & South Plainfield.**—This company has been incorporated to build a railroad from Roselle, N. J., on the New Jersey Central road, west by South to South Plainfield, a distance of 9 miles. It is stated that the road is intended for local traffic only, and to develop property along the line.

**Rutland.**—The Boston Advertiser of Nov. 28 says: "In the suit of this company brought by the former management against Clement & Sons, who are now in control, to invalidate 2,970 shares of preferred stock that was overissued by ex-Treasurer Haven, the Supreme Court of Vermont has decided in favor of the defendants, thus holding that the company was liable for the dishonest act of its Treasurer when innocent third parties were injured thereby. It appears that the Court considered the stock valid, but possibly not. A fuller statement will be awaited with interest. Haven had sold the stock to Clement & Son and Dr. Mead, the present Treasurer, when they were seeking to get control. The value of the stock was about \$60,000, which the railroad company must lose, except a small dividend which can be got from Haven's estate."

**San Antonio & Aransas Pass.**—The directors of this company have awarded the contract for grading the road from Floresville, Tex., to the proposed terminus at Harbor Island, Aransas Pass, to Messrs. Thomas Johnson and J. C. Nelson. Mr. Johnson has just completed the grading of the 30 miles from San Antonio to Floresville. Tracklaying has been completed from San Antonio to Calveras Creek, a distance of 12 miles, and will be continued as soon as the bridge over the creek is completed.

**Securities on the New York Stock Exchange.**—The Governing Committee of the New York Stock Exchange has placed the following securities on the lists:

**Norfolk & Western,** \$1,500,000 adjustment mortgage bonds and \$1,605,000 improvement and extension bonds of 1883.

**Pine Creek,** \$3,500,000 first mortgage bonds, guaranteed by the New York Central & Hudson River Co., the Philadelphia & Reading and the Corning, Cowanesque & Antrim companies.

**St. Joseph & Grand Island,** \$7,000,000 first mortgage bonds and \$1,680,000 second mortgage income bonds.

**St. Louis & San Francisco,** \$1,454,300 additional common stock.

The following securities in default have also been given a place on the lists:

**New York, Lake Erie & Western,** second consols ex coupon of June 1, 1886, in accordance with the plan of adjustment now being carried out by Drexel, Morgan & Co.

**Wabash, St. Louis & Pacific,** Mercantile Trust Co. receipts for \$16,000,000 general mortgage bonds. Also Metropolitan Trust Co. receipts for \$2,269,000 Missouri, Iowa & Nebraska first mortgage bonds, otherwise known as Iowa Division firsts.

**Scioto Valley.**—In the suit against this company the motion of Mr. C. P. Huntington to have the case remanded to the Scioto County Court has been granted. This is a matter of practice and does not affect the merits of the case; an appeal from the order has been taken.

**Terre Haute & Southeastern.**—A Terre Haute dispatch reports that Messrs. McKee and Colli, who have owned this road for some time, have sold it to Mr. Mackey, president of the Evansville & Terre Haute road. The line extends from Terre Haute, Ind., to Worthington, and at that place it connects with the new line, which has just been completed, from Evansville, Ind., to Worthington.

**Texas & Pacific.**—This company gives notice that coupons on Eastern Division mortgage bonds due Dec. 1 will be purchased by the Mercantile Trust Co., of New York, and will afterward be deposited with the Fidelity Trust Co., of Philadelphia, in pursuance of an agreement between the company and the committee of bondholders.

**Toledo, Cincinnati & St. Louis.**—Receiver McNulta has filed a report with the United States Court in Indiana, which shows Sept. 30 a receiver's debt of \$918,746 upon the road from Toledo to East St. Louis, not including costs of court in foreclosure proceedings, attorney's fees, receiver's compensation, unadjusted claims for stocks killed and injured and interest on receiver's certificates, Frankfort & Kokomo bonds and Brooks' locomotive contract. There is, besides, a car rental claim of some \$50,000, only a small part of which he thinks will be allowed; also the claim of the purchasers of the Dayton & Southeastern and the Dayton divisions for an allowance for the transportation of fuel for the Toledo and St. Louis divisions, amounting to about say, \$49,500 based upon a claim of 1 cent. per ton per mile for hauling coal, during which time he is reliably informed that



The total of freight and coal shows a decrease in tonnage from 11,071,938 tons in 1884 to 10,253,489 tons in 1885, or 7.39 per cent.; a decrease in ton mileage from 1,794,946,511 in 1884 to 1,687,546,688 in 1885, or 5.98 per cent.



The average rate decreased from 0.719 cent in 1884 to 0.656 cent in 1885, or 8.76 per cent.

The earnings per ton-mile were 0.973 cent in 1878 against 0.656 cent in 1885—a reduction of 32.6 per cent.; while the expenses per ton-mile were reduced from 0.674 cent in 1878 to 0.475 in 1885, or 29.5 per cent. The earnings per passenger per mile were 2.188 cents in 1878 against 1.788 cents in 1885, or a decrease of 18 per cent. The expenses per passenger per mile were 1.693 cents in 1878 against 1.527 cents in 1885, or a reduction of 10 per cent.

The comparison of the freight traffic of the year 1873 is still more striking. In that year the company earned from this source \$15,015,807 on a tonnage movement of 1,032,986,809 tons; while in 1885, owing to the depressed rates, it earned but \$11,071,700 on a tonnage movement of 1,687,546,988 tons. In other words, it did 63 per cent. more work for 26 per cent. less money, because the average earnings per mile were reduced from 1.454 cents in 1873 to .656 cent in 1885, or 55 per cent., and the average expenses per ton per mile from .933 cent to .475 cent, or 49 per cent. The passenger movement for 1873, compared with 1885, shows an increase of 5.6 per cent., while the money earned from this traffic shows a decrease of 15 per cent.

The following figures, giving the average number of tons per freight train, will indicate one of the important causes for the decreased cost of movement, and will show more forcibly than anything else the value of the consolidation engine, and the importance of still further efforts to increase the number of loaded cars west-bound.

Average number tons per Freight Train.					
Year.	Tons.	Year.	Tons.	Year.	Tons.
1875	134	1879	185	1883	227
1876	138	1880	210	1884	229
1877	145	1881	218	1885	252
1878	159	1882	228		

A fair idea of the very low rates and cost ruling during the past year can be obtained from the fact that it was necessary to haul a ton of freight 152 miles to earn one dollar while a ton of freight was hauled 210 miles at a cost of one dollar.

#### NEW YORK, PENNSYLVANIA & OHIO RAILROAD.

The earnings of this line were:

	1884.	1885.	Inc or Dec.	P. c.
General freight	\$3,311,300	\$2,654,773	D. \$656,527	20.50
Coal	882,258	902,311	L. 20,052	2.27
Passengers	1,481,173	1,294,243	D. 186,929	12.62
Mails	49,112	71,325	L. 22,213	45.23
Express	94,900	91,022	D. 3,877	4.10
Miscellaneous	58,746	51,487	D. 7,259	12.36
Totals	\$5,909,498	\$5,065,161	D. \$844,336	14.29

#### Expenses.

	1884.	1885.	Inc or Dec.	P. c.
Cond. transportat'n	\$1,824,414	\$1,526,687	D. \$297,727	16.32
Motive power	1,424,269	1,198,793	D. 225,476	15.83
Maintenance of way	643,394	616,982	D. 26,412	4.10
Maintenance of cars	347,167	282,297	D. 64,869	18.69
General expenses	49,496	59,198	D. 10,299	20.81
Totals	\$4,288,740	\$3,683,937	D. \$604,803	14.10

	1884.	1885.	Inc or Dec.	P. c.
Net earnings	\$1,620,758	\$1,381,224	D. \$239,534	14.78
Rentals	\$1,891,039	\$1,621,045	D. \$269,995	14.28

Net loss \$270,281 D. \$269,821 D. \$456 0.16

Per cent. of ex. 72.57 72.73

#### EXPENSES.

Conducting Transportation, Passenger.—The expenses under this account decreased from \$465,034 in 1884 to \$381,738 in 1885, or \$83,296, being 17.91 per cent.

The principal items of decrease were:

	1884.	1885.	Decrease.	P. c.
Brakemen	\$3,975	\$3,154	\$821	20.58
Car service	5,012	4,537	475	9.48
Conductors	9,196	8,537	659	7.17

The decrease in conductors, brakemen and switchmen is caused largely by a decrease in train mileage; car service, from the same cause; foreign agencies, by a reduction in commissions paid and a curtailment of outside agencies.

Conducting Transportation, Freight.—The expenses under this account decreased from \$1,359,379 in 1884 to \$1,141,928 in 1885, or \$217,451, being 15.98 per cent.

The principal items of decrease were:

	1884.	1885.	Decrease.	P. c.
Brakemen	\$40,211	\$31,524	\$8,687	21.60
Car service	16,839	15,793	1,046	6.21
Clerks	11,004	10,487	517	4.69
Conductors	17,678	16,982	696	3.94
Foreign agencies	39,391	31,524	7,867	19.97
Labor at stations	6,546	6,198	348	5.32

The decrease in conductors, brakemen, switchmen, and car service is caused by a reduction in the train mileage; clerks and labor at stations, by a decrease in tonnage and the enforcement of rigid economies; foreign agencies, by a large reduction in the expenses of fast freight lines.

Of the \$225,475.61 decrease in motive-power expenses, \$117,505 was in cost of coal for locomotives, due partly to a decrease of nearly 6 per cent. in the quantity used, but chiefly to a decrease from \$1.57 to \$1.23 in the cost per ton, largely due to the use of run-of-mine, nut and slack coals instead of the screened lump coal formerly used. The other chief items of decrease in motive-power expenses are \$45,966 in repairs of freight engines (but an increase of \$7,734 in repairs of passenger engines) and of \$36,741 in engineer's and firemen's wages.

The engine mileage was:

1885.	1884.	Decrease.	P. c.
6,296,398	6,942,104	645,716	9.3

A decrease of \$24,611 in car repairs is attributed largely to a decrease in car mileage. There was also a decrease of \$27,841 in expenses for renewals of freight cars.

The only considerable decrease in maintenance of way expenses is \$48,957 for repairs of bridges; there was an increase of \$19,511 in cost of rails. The condition of track and permanent way is generally much better than at the close of the previous year.

#### TONNAGE AND EARNINGS.

Merchandise Freight.—This tonnage has decreased from 3,650,649 tons in 1884 to 3,010,274 in 1885, or 640,375, being 17.08 per cent.

The ton mileage has decreased from 588,282,206 in 1884 to 548,812,682 in 1885, or 39,469,524, being 6.71 per cent. The decrease is caused by this company declining unprofitable business and by the great depression in the iron trade in the Mahoning and Shenango valleys and at Pittsburgh; the decrease in pig and bloom iron being 52,469 tons, or 23.63 per cent.; manufactured iron, 60,145 tons, or 22.61 per cent.; other manufactures, 34,702 tons, or 16.84 per cent.; iron and other ores, 177,744 tons, or 29.27 per cent.

The earnings per ton per mile decreased from 0.567 cent in 1884 to 0.479 cent in 1885, or 0.088 cent, being 15.52 per cent. This was caused principally by the very low through rates, both east and west bound, also by a decrease in local rates west bound, caused by increased competition.

Coal.—The tonnage has increased from 1,497,011 tons in 1884 to 1,696,207 tons in 1885, or 199,196, being 13.31 per cent.

The ton mileage increased from 115,660,251 in 1884 to 145,419,557 in 1885, or 29,759,306, being 25.73 per cent. The increase is entirely due to an increase in the through business, largely in anthracite coal. The revenue, however, owing to the severe competition, only increased from \$882,

257.79 in 1884 to \$902,310.90 in 1885, or \$20,053.11, being 2.27 per cent.—the rate per ton per mile being reduced from 0.763 cent in 1884 to 0.620 cent in 1885, or 0.143 cent, being 18.74 per cent.

The coal tonnage upon this line can be very largely increased, especially during the season of navigation, provided this company can receive proper and fair treatment from its Pittsburgh connection.

Passenger Traffic.—The total number of passengers has decreased from 1,348,376 in 1884 to 1,309,297 in 1885, or 39,079, being 2.90 per cent.

The number of passengers carried one mile, however, has increased from 65,405,813 in 1884 to 76,690,954 in 1885, or 11,285,141, being 17.08 per cent., caused by an increase in through passengers carried.

The average miles per passenger has increased from 48.5 miles in 1884 to 58.5 miles in 1885, or 10 miles, being 20.62 per cent.

The earnings have decreased from \$1,481,172 in 1884, to \$1,294,243 in 1885, or \$186,929, being 12.62 per cent.

The rate per passenger per mile has decreased from 2.243 cents in 1884 to 1.688 cents in 1885, or 0.555 cents, being 24.74 per cent.

The passenger traffic on this line is subject to severe competition from one end to the other, there being little business left that can be considered as non-competitive; the earnings per passenger train-mile being \$1 per mile in 1885 as compared with \$1.05 in 1884, while the average number of passengers per train increased from 43 in 1884 to 53 in 1885.

#### GENERAL.

The operations of this property, while entailing a loss upon the New York, Lake Erie & Western Co., under the lease, of \$239,820, have been conducted with great economy, and, under any reasonable rates, would have been a source of profit. The expenses per train-mile were reduced to the very low figures of 74 cents for freight and 58 cents per passenger train-mile; the cost per ton per mile to 0.409 cents, a decrease of 13.35 per cent. as compared with the previous year. The cost per passenger per mile was 1.098 cents, a decrease of 25.56 per cent. as compared with the previous year. The average tons per train increased from 165 in 1884 to 182 in 1885, or 10.30 per cent. These results will compare favorably with any lines similar in their operating conditions, and indicate that the property cannot be worked under the lease, in times of depression like the past year, without a loss to this company.

The judicious course pursued by the President of the New York, Pennsylvania & Ohio Co., in encouraging the expenditure of the amounts advanced by that company for reducing grades and increasing facilities in a way that will, at the same time produce economy in operation, will ultimately place this property in a position where it can be operated at a lower cost.

#### FINANCIAL STATEMENT.

The Comptroller's report gives the general balance sheet as follows:

Assets.		Liabilities.	
<b>Capital Stock.</b>		<b>Capital Stock.</b>	
Common	\$77,223,101.00	Preferred	8,145,800.00
Total capital stock	\$85,368,900.00		
<b>Funded Debt.</b>		<b>Funded Debt.</b>	
Total bonded indebtedness	75,208,485.10		
<b>Deferred Liabilities.</b>		<b>Deferred Liabilities.</b>	
Amounts due our own coal companies, etc.	\$249,241.24		
Overdue coupons on second consolidated bonds, viz:			
Dated June 1, '84, \$1,007,922.00			
Dec. 1, '84, 1,007,922.00			
June 1, '85, 1,007,922.00			
Accrued from June 1, '85, to Sept. 30, 1885	671,948.00		
	3,695,714.00		
Bills payable secured by mortgages on real estate	21,000.00		
Sundries	98,069.02		
Total deferred liabilities	4,064,024.26		
<b>Current Liabilities.</b>		<b>Current Liabilities.</b>	
Loans payable	1,919,131.06		
Bills payable	712,716.13		
Dividends	7,638.00		
Interest on funded debt:			
Due and unpaid, \$190,475.17			
Accrued but not due, 426,130.97			
	616,606.14		
Interest other than on the bonds of the company:			
Due and unpaid, \$82,590.00			
Accrued but not due, 148,788.86			
	231,378.86		
Rentals of leased lines:			
Due and unpaid, \$179,721.83			
Accrued but not due, 234,854.79			
	414,576.67		
<b>Traffic balances:</b>		<b>Traffic balances:</b>	
Freight			
Due to other roads, \$305,496.22			
Less due from other roads	60,618.90		
	244,877.32		
Passenger			
Due to other roads, \$240,681.65			
Less due from other roads	100,724.12		
	139,957.53		
Mileage			
Due to other roads, \$208,180.39			
Less due from other roads	73,851.82		
	134,328.57		
Pay-rolls for September (payable in October)	858,126.30		
Audited vouchers for supplies, etc.			
September vouchers	\$429,993.72		
Previous to September	529,880.50		
Miscellaneous	959,683.22		
	308,381.07		
Total current liabilities	6,447,000.87		
Total liabilities	\$171,140,010.23		
<b>Assessments and Income Balances.</b>		<b>Assessments and Income Balances.</b>	
Total assessments	\$3,384,451.47		
Profit and loss:			
Surplus Sept. 30, 1885	4,511,723.32		
Sinking fund, prior lien bonds	100,000.00		
	\$7,896,174.79		
Less:			
Discount on stock and bonds	\$745,838.10		
Commissions and expenses, extending New York & Erie Railroad third mortgage bonds	169,820.00		
	915,658.10		
	6,980,516.66		
	\$178,129,526.92		

#### COAL COMPANIES.

The coal companies owned by the New York, Lake Erie & Western Railroad Co. have mined during the year the following tonnage:

Company	Supply.	For market.	Total.
Tons.	Tons.	Tons.	
Hillside Coal & Iron Co. anthracite	70,189	192,117	262,306
Towanda Coal Co. bituminous	156,637	9,989	166,626
Blossburg Coal Co. bituminous and coke	111,390	70,476	181,866
Northwest Mining & Exchange Co. bituminous and coke	147,550	111,908	259,158
Total coal and coke	485,766	384,190	869,956

Being an increase over the preceding year of 79,358 tons. The Blossburg Coal Co., in addition to its coal lands, operates extensive saw-mills from which the shipments of lumber during the year amounted to 19,008,645 feet, being an increase over the previous year of 1,282,870 feet. The product of these properties is transported over the New York, Lake Erie & Western Railroad and its branches; and, in addition to the profit derived directly from the operation of the mines and saw-mills, the New York, Lake Erie & Western Railroad Co. derives a large revenue from transportation.

The present annual capacity of the companies is a total of 1,860,000 tons coal and coke and 20,000,000 ft. lumber.

#### CONCLUSION.

Mr. Felton's report says in conclusion: "The year just closed has been the most serious in the history of this company, as far as the rates obtained for transportation, both passenger and freight, are concerned; but, to meet the situation, the most rigid economies have been enforced, so that the cost of moving the traffic has been reduced to lower average figures than have ever been reached before, and the results will compare favorably with those of any of its competitors. These economies have been brought about by an increase in the train load, by the use of heavier engines, and by a determined effort on the part of the operating officers to reduce to the lowest possible point the movement of empty cars, by abolishing all unnecessary offices, and by the reduction of force everywhere to meet the falling-off in business.

"The condition of the lines owned and operated by this company is excellent—most of the bridges being iron, the main lines all laid with steel, the last of the broad gauge equipment out of service, and the third rail out of use.

"Some expenditures should be made this year for the purpose of introducing facilities for handling the business, the most important being the improvement of the Twenty-third street property in the city of New York. This improvement will cost about \$50,000, and will yield a handsome return in net earnings, besides changing an unproductive property, and one which is a burden now, into a valuable addition to our terminal facilities."

Assets.		
Cost of Road and Appurtenances.		
The estate of the Erie Railway Co.....	\$149,678,169.35	
Construction main line .....	4,901,541.09	
Betterments to branch lines .....	582,906.62	
Third rail .....	931,122.83	
Equipment .....	5,394,525.75	
Real estate .....	674,293.03	
Elevator at Buffalo .....	305,542.87	
Lehigh docks at Buffalo .....	137,963.72	
Erie coal docks at Buffalo .....	158,344.52	
Ship basin and docks at Jersey City .....	214,528.77	
Weehawken docks at Jersey City .....	40,727.49	
New York & Fort Lee R. R. ....	25,346.45	
Improvements at Union Stock Yards, 4th street, New York city .....	31,505.92	
Union Bolt Works property, Paterson .....	4,648.27	
Amounts paid on account of equipment .....	2,559,232.58	
Total cost of road and appurtenances .....		\$165,640,559.05
Investments.		
Stocks of other companies .....	\$3,033,315.49	
Bonds of other companies .....	293,819.60	
		3,327,135.09
Advances.		
N. Y., L. E. & W. Coal & Railroad Co .....	\$1,978,989.31	
N. Y., L. E. & W. Docks & Imp. Co. ....	433,847.28	
Other companies .....	389,331.41	
		2,802,168.00
Current Assets.		
N. Y., Penn. & Ohio Co., for permanent improvements and betterments under the lease ..	\$3,640.42	
Bills receivable .....	27,496.96	
Materials and supplies on hand at shops and on road .....	956,936.64	
Due from freight and passenger agents and others for freight and passenger transportation (collectible in October) .....	1,678,037.98	
Miscellaneous—		
Due from various individuals and companies for proportion of rebates, labor, materials, etc. ....	\$559,250.21	
Less amount due to individuals and companies on similar accounts .....	41,757.41	
		497,492.80
Cash—		
On deposit in New York .....	\$134,672.70	
On deposit in London to pay coupons .....	9,247.46	
		143,920.16
Total current assets .....		3,238,424.06
Contingent Assets.		
Marine National Bank .....	\$150,993.62	
Chicago & Atlantic Railway Co. ....	1,846,823.68	
Other companies for advances .....	506,045.49	
N. Y., L. E. & W. Coal & Railroad Co (operating and interest account) .....	223,771.90	
Sundry individuals and companies .....	393,605.13	
Total contingent assets .....		3,121,230.82
Total assets .....		\$178,129,526.93
The funded debt remains unchanged from last year, as stated in the President's report, where also the changes in capital stock were noted.		